ID88046138

TD
795.7
.E246
1996

DRAFT ENVIRONMENTAL IMPACT STATEMENT/ ENVIRONMENTAL IMPACT REPORT

State Clearinghouse No. 95052023

Eagle Mountain Landfill and Recycling Center Project

County of Riverside Planning Department

and

United States Department of the Interior
Bureau of Land Management

Prepared by:
CH2MHILL

BLM LIBRARY
RS 150A BLDG. 50
DENVER FEDERAL CENTER
P.O. BOX 25047
DENVER, CO 80225

July 1996

m115231.T6.20 cover 6/96

BLM LIBRARY
RS 150A BLDG. 50
DENVER FEDERAL CENTER
P.O. BOX 25047
DENVER, CO 80225

DRAFT
ENVIRONMENTAL IMPACT STATEMENT
ENVIRONMENTAL IMPACT REPORT
FOR THE
EAGLE MOUNTAIN LANDFILL AND
RECYCLING CENTER PROJECT
Environmental Impact Report No. 397
State Clearinghouse No. 95052023

July 1996

Applicant

MINE RECLAMATION CORPORATION
and
KAISER EAGLE MOUNTAIN, INC.

Prepared for

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Henri R. Bisson 6/25/96
Henri R. Bisson — Date
District Manager,
California Desert

COUNTY OF RIVERSIDE
PLANNING DEPARTMENT

Aleta J. Laurence 6/20/96
Aleta J. Laurence, A.I.C.P. — Date
Planning Director

BLM-CACA-30070
BLM-CACA-25594
BLM-CACA-31926

Eagle Mountain Landfill Project, Riverside County, California
Draft Environmental Impact Statement/Environmental Report
Issued: July, 1996

Lead Agencies

U.S. Department of the Interior
Bureau of Land Management
California Desert District
Palm Springs—South Coast Resource Area
(NEPA Lead Agency)

County of Riverside
Riverside, California
(CEQA Lead Agency)

Cooperating Agencies: National Biological Service, National Park Service

For Information Contact

Joan Oxendine
California Desert District
6221 Box Springs Boulevard
Riverside, CA 92507
909/697-5365

David Mares
County of Riverside
4080 Lemon Street, 9th Floor
Riverside, CA 92501
909/275-3275

Prepared By: CH2M HILL, 3 Hutton Centre Drive, Santa Ana, CA 92707

ABSTRACT: The Eagle Mountain Project comprises a Class III nonhazardous solid waste landfill in an unused open pit mine at the Eagle Mountains in Riverside County, California, and the renovation and resulting repopulation of the adjacent Eagle Mountain Townsite by Kaiser on property owned by Kaiser. The Project is located in the California Desert Conservation Area. Under the Federal Land Policy and Management Act, Kaiser Eagle Mountain, Inc., has applied for about 3,481 acres of Bureau of Land Management lands in exchange for about 2,486 acres of land currently owned by Kaiser. Also, a new FLPMA right-of-way would be issued for the entire length of the Eagle Mountain Railroad, the existing Eagle Mountain Road, and the proposed Eagle Mountain Road Extension. The landfill will comprise about 2,164 acres and an additional 2,490 acres will be used for landfill support facilities and open space. At full operation, the landfill will accept up to 20,000 tons of solid waste per day from 7 Southern California counties for 117 years. Approximately 16,000 tons per day will be shipped in containers along the Southern Pacific Railroad to Ferrum Junction. From there, the trains will use the 52-mile Eagle Mountain Railroad to the Project site. A total of 4,000 tons per day of containerized waste will be delivered by truck. The Eagle Mountain Landfill Specific Plan amends the Riverside County General Plan and Zoning Ordinance and Map to facilitate the landfill operation. The Eagle Mountain Townsite Specific Plan covers 429 acres, identifies the existing residential/commercial and circulation patterns in the Townsite, provides planning standards consistent with the infrastructure already located within the Townsite, and provides for improvements to the currently unoccupied housing stock similar to improvements made by Kaiser to the existing occupied homes. The alternatives considered in this EIS/EIR are: (1) No Action, (2) Reduced Volume of Onsite Disposal, (3) Alternate Road Access, (4) Rail Access Only, (5) Landfill on Kaiser Land Only, and (6) Landfill Development/No Townsite Development.

Last Date for Receipt of Written Public and Agency Comments: September 10, 1996

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Palm Springs — South Coast Resource Area
63-500 Garnet Avenue
Post Office Box 2000
North Palm Springs, CA 92258-2000

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:

CACA-30070
CACA-25594
CACA-31926

Dear Reader:

We are pleased to provide this Draft Environmental Impact Statement and Environmental Impact Report (EIS/EIR) for the proposed Eagle Mountain Landfill and Recycling Center Project. The project has been proposed by Mine Reclamation Corporation and Kaiser Eagle Mountain, Inc., a wholly-owned subsidiary of Kaiser Ventures, Inc. on a portion of the Kaiser Eagle Mountain Mine in the County of Riverside, California and on federally owned lands administered by the Bureau of Land Management (BLM). These federally owned lands are proposed to be conveyed to Kaiser in exchange for lands owned by Kaiser along the existing Eagle Mountain railroad.

The purpose of this document is to identify and describe potential environmental impacts that would result from establishing and operating the proposed Class III non-hazardous waste landfill. The document has been prepared in accordance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The BLM is the lead federal agency for the NEPA process, and the National Park Service and National Biological Service are cooperating federal agencies. The County of Riverside is the lead agency for the CEQA process.

This draft EIS/EIR does not identify an agency preferred alternative as was done in the original EIS/EIR. At the present time the BLM does not have a preferred alternative, and is working closely with Joshua Tree National Park to address environmental concerns. Following analysis of all public comments on this document, an agency preferred alternative or alternatives will be identified in the Final EIS/EIR. This change from the original EIS/EIR to not identify an agency preferred alternative or alternatives is in conformance with Council of Environmental Quality and internal BLM procedures.

Comments concerning the adequacy of this document will be considered in preparation of the Final EIS/EIR. A 60-day public review period has been established for this document. Written comments to this document will be accepted through September 10, 1996 and should be addressed to:

Eagle Mountain Landfill
and Recycling Center Project
Bureau of Land Management
6221 Box Springs Boulevard
Riverside, California 92507

In addition, four public hearings will be held during the public comment period to receive verbal testimony. The schedule is as follows

Date/Time	Location
August 5, 1996 6:00 - 9:00 pm	Lake Tamarisk Clubhouse 26251 Parkview Desert Center
August 6, 1996 4:00 - 7:00 pm	Palm Springs Convention Center Springs Theater 277 N. Avenida Caballeros Palm Springs
August 7, 1996 6:00 - 9:00 pm	Blackrock Visitor Center 9800 Blackrock Canyon Road Yucca Valley
August 8, 1996 4:00 - 7:00 pm	Riverside Municipal Auditorium 3485 Mission Inn Avenue Riverside

Sincerely,

Julia Dougan

Julia Dougan
Area Manager
Palm Springs-South Coast Resource Area

Executive Summary

Purpose of this Document

This Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR), addresses the potential environmental effects that could result from implementing the proposed Eagle Mountain Landfill and Recycling Center Project (Eagle Mountain Project, or Project). The Draft EIS/EIR been prepared in accordance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The United States Department of the Interior, Bureau of Land Management (BLM), is the lead federal agency for the NEPA process. The County of Riverside, California, (County) is the lead agency for the CEQA process. These agencies have independently evaluated, directed, and supervised the preparation of this document. The National Park Service (NPS) and the National Biological Service (NBS) have participated as cooperating agencies under NEPA. In the preparation of this Draft EIS/EIR, the format specifications of NEPA have been followed, with minor modifications to include discussions required by CEQA. Table ES-1 illustrates correspondence between contents of this report and the discussions required by CEQA.

Table ES-1
Cross Reference for CEQA Contents

CEQA Guidelines Section	Topic	Location in Draft EIS/EIR
15122	Table of contents or Index	Table of Contents
15123	Summary	Executive Summary
15124	Project Description a. Location and Boundaries b. Statement of Objectives c. Technical Characteristics d. Uses of EIR	1.0 Introduction
15125	Environmental Setting	3.0 Affected Environment
15126	Environmental Impact a. Significant Effects b. Significant Effects Which Cannot be Avoided c. Mitigation Measures d. Alternatives e. Short Term/Long Term f. Significant Irreversible Changes g. Growth-Inducing Impacts	4.0 Environmental Consequences (Refer to Individual Impact Sections) 7.0 Significant Irreversible Environmental Changes (Refer to Individual Impact Sections) (Refer to Individual Impact Sections) (Refer to Individual Impact Sections) 6.0 Relationship Between Local Short-term Uses of Man's Environment and the Maintenance and Enhancement of Long-term Productivity 7.0 Significant Irreversible Environmental Changes 4.8 Growth Inducement and Socioeconomics
15128	Effects Not Significant	(Refer to Individual Impact Sections)
15129	Organizations and Persons Consulted	8.0 List of Preparers
15130	Cumulative Impacts	5.0 Cumulative Impacts
15131	Economic and Social Effects	4.8 Growth Inducement and Socioeconomics

The BLM has not selected a preferred alternative in this Draft EIS/EIR and will identify an agency preferred alternative or alternatives in the Final EIS/EIR after the public comments on this Draft EIS/EIR have been assessed.

Description of Proposed Project and Historical Setting

Mine Reclamation Corporation (MRC) and Kaiser Eagle Mountain, Inc., a wholly-owned subsidiary of Kaiser Ventures Inc., propose to develop the Eagle Mountain Project on a portion of the Kaiser Eagle Mountain Mine in the County of Riverside, California (Figure ES-1). Kaiser currently owns portions of the Project site, and the remainder of the site is owned by the United States Government and administered by the BLM. These federally owned lands are proposed to be conveyed to Kaiser by the BLM in exchange for lands owned by Kaiser along the existing Eagle Mountain Railroad.

The proposed Eagle Mountain Project comprises two major features: (1) Eagle Mountain Landfill, a Class III nonhazardous municipal solid waste landfill to be operated by MRC; and (2) the renovation and subsequent repopulation of the existing Eagle Mountain Townsite (Townsite) adjacent to the proposed landfill site, which is owned by Kaiser.

Eagle Mountain Landfill

The proposed Eagle Mountain Landfill is primarily a waste-by-rail facility designed to meet a significant portion of Southern California's long-term municipal solid waste disposal needs. Figure ES-2 shows the projected waste flow volumes for the seven-county wasteshed area in Southern California over the anticipated life of the Project. The analyses conducted in this EIS/EIR are based on a total landfill life of approximately 117 years. The amount of waste to be accepted at the proposed landfill will incrementally increase over the first 25 years of operation: approximately 4,500 tons per day (tpd) for Years 1 to 4; 8,200 tpd for Years 5 to 9; 12,100 tpd from Year 10 to 14; and 16,000 tpd will for Years 15 to 24). After this time, the landfill will begin to accept up to 20,000 tons per day of municipal solid waste for the remaining years of operation. The total capacity of the landfill will be approximately 708 million tons. The site of the proposed landfill is bordered on the north, west, and southwest by the Eagle Mountains and on the east and southeast by the Chuckwalla Valley. The southern boundary of Joshua Tree National Park (JTNP) in the Pinto Basin is within approximately 1.5 miles of the Eagle Mountain Project site. The site of the proposed landfill encompasses approximately 4,654 acres. Of this acreage, approximately half of the site (2,164 acres) will be used for actual disposal of waste, and the remaining acreage (approximately 2,490 acres) will be used for buffer areas and ancillary facilities.

The majority of the waste received at the landfill will be transported by train via the Southern Pacific rail system and an existing 52-mile, Kaiser-owned rail line that extends from Ferrum Junction to the Eagle Mountain Mine. Of the remaining waste received at the proposed landfill and not transported by train, most will be transported by transfer trucks in enclosed waste-haul trailers; only a small percentage of waste will be accepted at the landfill site from

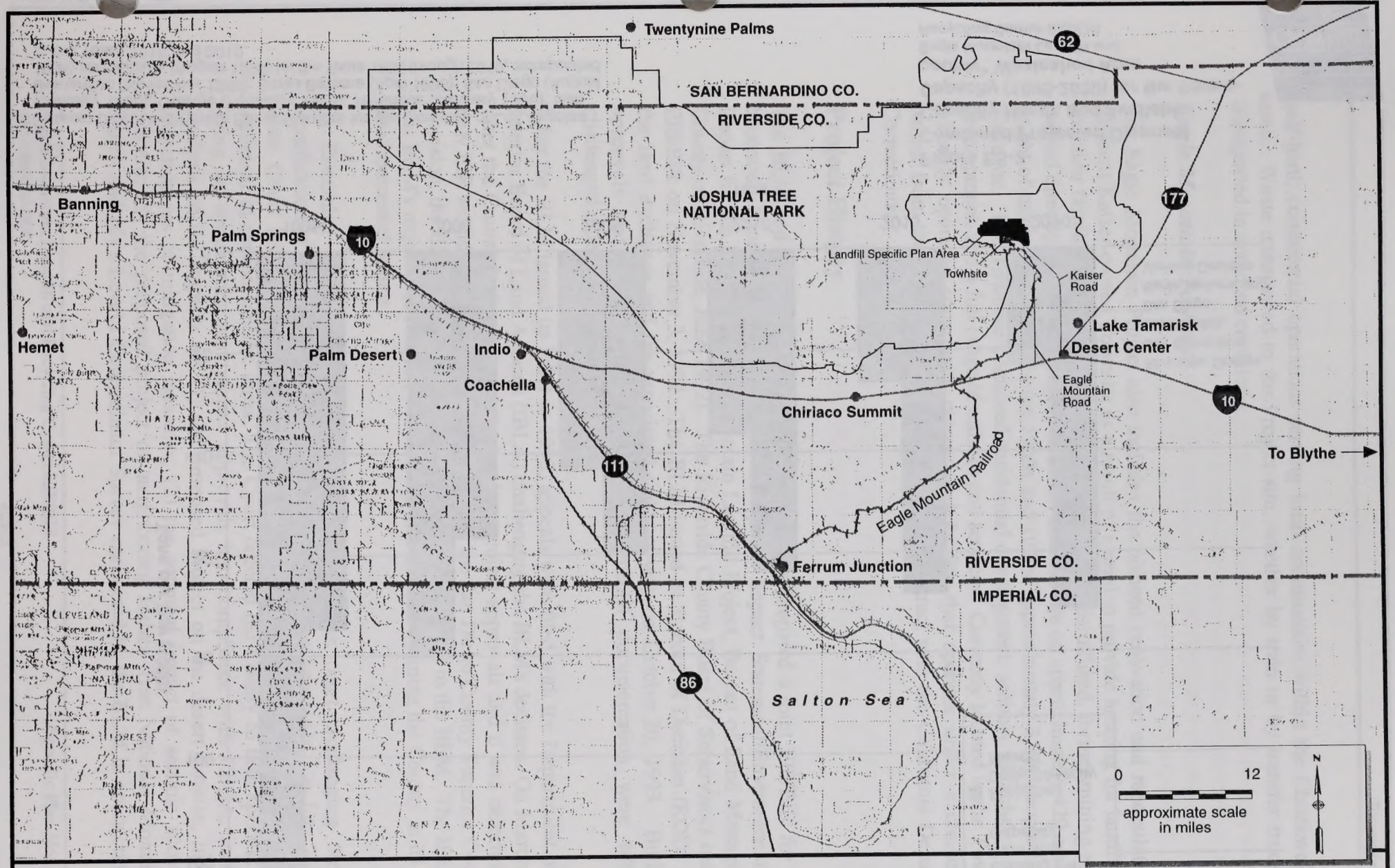
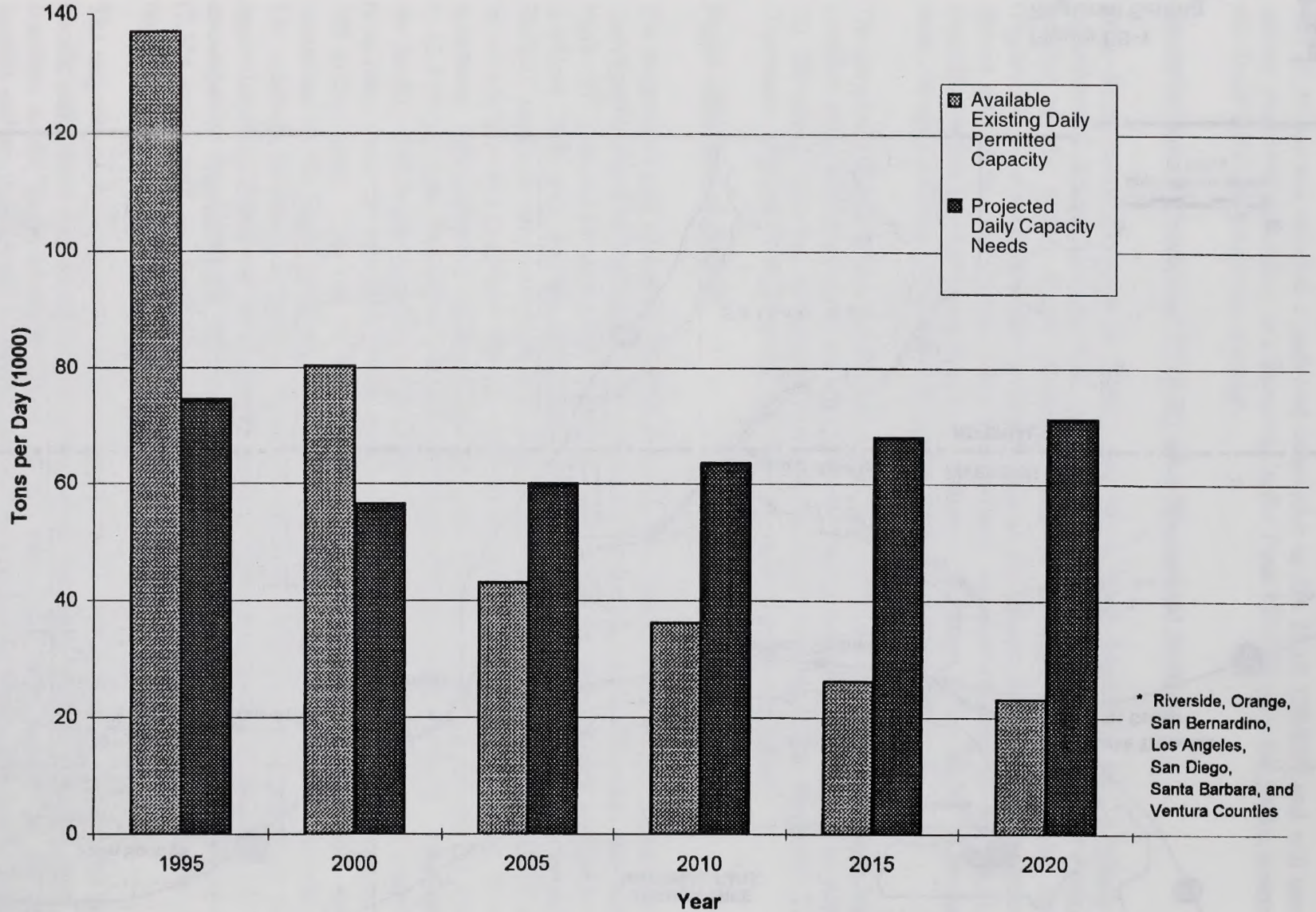


Figure ES-1
Regional Setting
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL



Source: Draft Countywide Siting Element for the Counties of Los Angeles (January 1996); Orange (February 1995); Riverside (January 1996); San Bernardino (November 1995); Santa Barbara (April 1996); San Diego (August 1995) and Ventura (August 1995) for the Years 1995 through 2010, extrapolated to the Years 2015 and 2010.

Figure ES-2
Combined Projected Disposal Capacity Needs and Available Capacity (1995-2020) for the Seven-county* Wasteshed Area
Eagle Mountain Landfill and Recycling Center EIS/EIR

self-haul, commercial operations serving local communities within the Chuckwalla Valley area. Waste transported to the Project site, whether by train or by transfer truck, will be transported in enclosed containers.

Eagle Mountain Townsite

The Eagle Mountain Project also includes the planned renovation and repopulation of the adjacent Kaiser-owned Townsite as a result of a need to provide housing for landfill workers and their families. The Townsite is an existing, but underutilized, former mining community located directly south of the Eagle Mountain Landfill site on approximately 429 acres. At the height of mining operations in the 1960s and 1970s, approximately 3,700 people lived in the Townsite. The Townsite contained residential development, schools, churches, commercial development, and a full range of utilities and services. Currently located in the Townsite is a privately operated community correctional facility that operates under a conditional use permit from the County of Riverside and under contract with the California Department of Corrections.

Project History

The BLM and the County of Riverside previously prepared a joint EIS/EIR for the Eagle Mountain Landfill project (Final Environmental Impact Statement/Environmental Impact Report for the Proposed Eagle Mountain Landfill Project, Bureau of Land Management and County of Riverside, June 1992). The Riverside County Board of Supervisors certified this EIS/EIR on November 3, 1992. The BLM issued its Record of Decision (ROD) approving the land exchange and the associated rights-of-way on October 20, 1993. Both of these approvals and the adequacy of the environmental documentation were subsequently challenged in legal proceedings.

After the BLM issued its ROD in 1993, appeals were filed with the Department of Interior's Interior Board of Land Appeals (IBLA) challenging the BLM's decision. On March 13, 1995, after the County had withdrawn its previous project approvals and it was determined that a new EIR would be prepared in accordance with the San Diego County Superior Court (Court) decision, the BLM requested that the IBLA remand the ROD to the BLM. The IBLA granted the BLM's request for remand, which facilitated the BLM joining the County in its additional environmental review.

In December 1992, three actions were filed in state court challenging the County's certification of the previous EIS/EIR and associated project approvals. On July 26, 1994, the state Court issued Statements of Decision in the three cases, finding that the EIR was deficient in certain specific areas. The Court ordered the County to take specific actions to bring its certification and project approvals into compliance with CEQA, including full analysis of the impacts of: (1) the proposed Project on the desert tortoise, including the effectiveness of mitigation measures; (2) the potential impact of seismic activity on the landfill; (3) the proposed project on neighboring Joshua Tree National Monument (now Park); and (4) a Level I Contaminant Survey conducted by the BLM in connection with the

proposed land exchange. In addition, the state Court specified that the new EIR provide a Project description that includes the neighboring Townsite; analyze the cumulative impacts of the proposed Eagle Mountain Landfill Project and Eagle Crest Energy Company (ECEC) proposed hydroelectric project; disclose the County's opposition to the ECEC hydroelectric project; and evaluate the feasibility of the mitigation measures for the proposed Project in light of the cumulative impacts analysis and the proposed land exchange between Kaiser and the BLM.

Consequently, this current Draft EIS/EIR has been prepared in response to the Writ of Mandate issued to the County by the San Diego County Superior Court to address the specific deficiencies of the previous EIR. The primary differences in the current Project design in comparison with the design proposed in the previous EIS/EIR include:

- Modification of the landfill liner and final cap design
- Change in the area from which waste will be accepted from four counties (i.e., Riverside, San Bernardino, Los Angeles, and Orange) to seven (i.e., the original four counties plus Ventura, Santa Barbara, and San Diego Counties)
- Development of separate land use applications for the Eagle Mountain Townsite and the proposed landfill
- Incorporation of additional landfill gas and leachate monitoring systems into the design
- Operation of the landfill primarily during daylight hours rather than only during daylight hours

Actions Covered by Current Draft EIS/EIR

Federal Actions/Approvals

Federal actions associated with the proposed Project comprise the following elements:

- Bureau of Land Management: Land Exchange and Grants of Rights-of-Way under the Federal Land Policy Management Act
- Army Corps of Engineers: Section 404 Permits for activities within the waters or headwaters of the United States
- Fish and Wildlife Service: Section 7 Consultation and Opinion under the Endangered Species Act

State Actions/Approvals

The following State of California approvals are necessary to develop and operate the Eagle Mountain Landfill. To obtain most of these permits, the landfill must first be approved and an EIR certified by the local jurisdiction, in this case the County of Riverside.

- California Regional Water Quality Control Board/State Water Resources Control Board
  - Waste Discharge Requirements
  - 401 Water Quality Certification
  - National Pollutant Discharge Elimination System (NPDES) Permit
- South Coast Air Quality Management District
  - 13 different air emission permits for stationary equipment
- California Department of Fish and Game
  - Section 1603 Streambed Alteration Agreement
  - Section 2081 Game Management Permit
- California Integrated Waste Management Board (CIWMB)
  - Local Enforcement Agency concurrence in Solid Waste Facility Permit

Local Actions/Approvals

The proposed County action involves reviewing land use permit applications pertaining to the proposed landfill and the Townsite. MRC must obtain approvals for the following land use permit applications from the County for the landfill:

- Specific Plan No. 305
- General Plan Amendment No. 402
- Change of Zone No. 6249
- Development Agreement No. 64
- Revised Permit No. 158 to Reclamation Plan No. 107

In addition, Kaiser must obtain approvals for the following land use permit applications from the County for the Townsite:

- Specific Plan No. 306
- General Plan Amendment No. 405
- Change of Zone No. 6253
- Tentative Tract Map No. 28217

The County of Riverside Department of Environmental Health acts as the Local Enforcement Agency (LEA) for the CIWMB and is responsible for writing and issuing a solid waste

facility permit to operators of solid waste facilities including landfills. This permit cannot be issued until all other approvals are granted, and the CIWMB must then concur in the permit.

Each of the preceding actions/analyses has been accomplished and incorporated within the present Draft EIS/EIR.

Alternatives Considered in Detail

In addition to the proposed Project, the following alternatives are considered in detail within this Draft EIS/EIR document. Within each environmental topic discussed, the impacts of each alternative are compared with those of the proposed Project. This Draft EIS/EIR does not identify a BLM preferred alternative or alternatives as was done is the previous EIS/EIR. At the present time, the BLM does not have a preferred alternative and is working closely with the NPS at Joshua Tree National Park (JTNP) to address environmental concerns. After the public comments on this Draft EIS/EIR have been assessed, an agency preferred alternative or alternatives will be identified in the Final EIS/EIR. This change from the previous EIS/EIR not to identify an agency-preferred alternative or alternatives is in conformance with Council of Environmental Quality and internal BLM procedures.

No Action Alternative

The No Action Alternative would leave the Eagle Mountain iron-ore mine site in its present condition, and the landfill would not be developed. The limited mining-related activities associated with the former mining operations would be maintained and the existing mining reclamation plan would continue to be implemented. Southern California communities would continue to rely on existing, expanded, or other new landfills. The No Action Alternative would leave the Townsite in its present condition, and no further renovation beyond existing approved uses or that permitted, subject to approval would occur. The rights-of-way would not be issued, and the land exchange between the BLM and Kaiser would not occur.

Reduced Volume of Onsite Disposal Alternative

This alternative would allow for the disposal of up to 16,000 tpd of waste including up to 14,000 tpd by rail and up to 2,000 tpd by truck. The landfill operating conditions would be similar to the proposed Project. The rights-of-way would be issued, and the land exchange between the BLM and Kaiser would occur.

Alternate Road Access Alternative

Under this alternative, transfer trucks would use the existing Kaiser Road to bring waste to the site instead of the existing Eagle Mountain Road and its proposed extension. Because Eagle Mountain Road would not be used, no new construction of the proposed Eagle Mountain Road extension would occur. All other landfill activities of the proposed Project would remain the same. The proposed renovation of the Townsite would proceed as in the

Proposed Action. The rights-of-way would be issued, and the land exchange between the BLM and Kaiser would occur.

Rail Access Only Alternative

This alternative would eliminate the use of all non-Chuckwalla Valley refuse-hauling trucks to the proposed site resulting in a reduction in the capacity of the landfill to 18,000 tpd. All other landfill activities of the proposed Project would remain the same. The proposed renovation of the Townsite would proceed as in the Proposed Action. The railroad right-of-way would be issued, and the land exchange between the BLM and Kaiser would occur.

Landfill on Kaiser Land Only Alternative

This alternative would allow for operation of the proposed landfill without implementing the proposed land exchange between the BLM and Kaiser. There would, however, be a modified land exchange involving a reversionary interest in some of the lands needed for the landfill and the Townsite, and the proposed rights-of-way would still be implemented. The landfill would comprise only Kaiser-owned lands in and around the East Pit (Phase 5 of landfill development under the Proposed Action). The landfill footprint would cover an area of approximately 289 acres and would accept a maximum of 10,000 tpd of municipal solid waste. Landfill design, development, operation, environmental monitoring, and closure and postclosure would be as described for the Proposed Action. The final grades for this alternative would result in an airspace of almost 183 million cubic yards (151 million tons). This alternative would have an estimated site life of 39 years. The proposed renovation of the Townsite would proceed as in the Proposed Action and the rights-of-way would be issued.

Landfill Development/No Townsite Development Alternative

Under this alternative, the landfill portion of the proposed Project would proceed as proposed; but the Townsite Specific Plan would not be approved, and renovation of existing structures of the Townsite would not occur within the existing Townsite. No improvements to existing conditions would be made within the Townsite, but federal land use approvals would proceed (i.e., the rights-of-way would be issued and the land exchange between the BLM and Kaiser would occur). The existing Townsite would remain essentially unchanged from the existing condition.

Alternatives Considered but Eliminated from Further Consideration

In addition to the alternatives discussed above and evaluated in this EIS/EIR, a number of other alternatives were considered but eliminated from further consideration because it was determined that they would not provide reasonable and feasible methods for substantially accomplishing objectives of the Proposed Action. The following eliminated alternatives are discussed in this EIS/EIR: (1) Landfill on Other Kaiser Property; (2) Waste Diversion; (3)

Proposed Offsite Landfill Locations; (4) Landfill Mining; (5) Alternative Townsite Locations; (6) Alternative Townsite Land Use and Densities.

Summary of Project Impacts, Mitigation, and Monitoring

The Draft EIS/EIR has analyzed potential impacts to the environment from the proposed Project in accordance with NEPA and CEQA and identified mitigation measures that would reduce these potential impacts. The following summaries describe (1) areas of no significant impact; (2) areas of no significant impact with mitigation; (3) cumulative impacts; and (4) impacts that cannot be mitigated.

Areas of No Significant Impact

Detailed analyses conducted for the Draft EIS/EIR have identified no significant environmental impacts requiring mitigation associated with the proposed Project and alternatives in the following environmental resource areas (the location of detailed discussion of these areas within the Draft EIS/EIR document is noted in parentheses):

- Traffic and Transportation (Section 4.3)
- Compatibility with Surrounding Land Uses (Section 4.5)
- Biodiversity and Ecosystem Function (Section 4.7)
- Growth Inducement and Socioeconomics (Section 4.8)
- Mineral Resources (Section 4.9)
- Recreational Resources (Section 4.10)
- Water and Sewer, Utilities, Community Facilities (Section 4.12)
- Cultural Resources (Section 4.14)
- Energy Consumption and Generation (Section 4.16)

Areas of No Significant Impact with Mitigation

With implementation of specific recommended mitigation measures, no significant environmental impacts associated with the proposed Project and alternatives are expected in the following environmental resource areas (the location of the Draft EIS/EIR location if the impact discussion is noted in parentheses):

Groundwater Quality and Use (Section 4.1)

- *Potential Impact*—Slight potential for degradation of groundwater due to migration of leachate and landfill gas (LFG)

  Mitigation Measures—Landfill liner system; leachate collection and removal system; LFG containment and control system; vadose zone monitoring system; Groundwater monitoring system; final cover

- *Potential Impact*—Potential for degradation of groundwater due to contaminant releases from landfill-support facilities

  Mitigation Measures—Regulatory compliance for hazardous substance containment, monitoring, and reporting

Public Health and Safety (Section 4.2)

- *Potential Impact*—Potential for exposure to hazardous substances at equipment maintenance facilities and the working face of landfill

  Mitigation Measures—Waste stream sorting and processing at the landfill site Landfill facility design, construction, and operation; regulatory compliance for hazardous substance containment, disposal, monitoring, and reporting

- *Potential Impact*—Potential hazards due to migration and accumulation of landfill gas and condensate

  Mitigation Measures—Landfill liner system; leachate collection and removal system; Vadose zone monitoring system; groundwater monitoring system; final cover

- *Potential Impact*—Potential for LFG, subsurface, surface, refuse, and right-of-way fires

  Mitigation Measures—Proper operation/maintenance of LFG collector system; staged response for control of subsurface fires in emergency response plan; retain large watering trucks and earth moving equipment for onsite emergency response; regular inspection/removal of vegetation posing right-of-way fire hazard

- *Potential Impact*—Potential for landfill to be used by animals, birds, and insects for foraging and/or breeding, which may result in an increased potential for disease transport

  Mitigation Measures—Daily application of earthen cover material per state regulations; bird control barriers/measures; final closure cap; operational practices

- *Potential Impact*—Potential worker exposure to noise, dust, odors, landfill gas, bodily injury, and unsafe materials

  Mitigation Measures—Compliance with state/federal occupational health and safety regulations; implement procedures for employee handling of refuse, including use of personal protective equipment, use of enclosed cabs on heavy equipment, rotation of worker assignments, and adequate supervision of personnel

Land Use (Section 4.5)

- *Potential Impact*—Potential impacts to existing residential and correctional facility uses

  Mitigation Measures—Restrict truck traffic to designated roads; maintain minimum 25-foot setback and maximum 60-foot height for all buildings; maintain berms to partially obscure views onto project site; control fugitive dust; install sound attenuating walls and landscape buffers as needed

- *Potential Impact*—Inconsistency with Riverside County General Plan and zoning ordinance (land use, open space, and solid waste management elements); potential impacts to MWD open aqueduct, JTNP, and biological resources

  Mitigation Measures—Submittal of County General Plan Amendment, Zone Change, Development Agreement, Revised Reclamation Plan, Specific Plans (landfill and existing Townsite), BLM/Kaiser land exchange; obtain permits from CDFG and USFWS

Surface Water Drainage and Flooding (Section 4.6)

- *Potential Impact*—Potential drainage impacts (erosion, plant/animal life, flooding, debris deposition) to the East Pit, Townsite, and alluvial areas east of Project site

  Mitigation Measures—Project design features, consistent with Riverside County Flood Control District stipulations, including: installation of temporary and permanent perimeter drainage control system; design to a 500-year storm event; slope final landfill cover not greater than 3 percent

Biological Resources (Section 4.7)

Desert Tortoise

- *Potential Impact*—Permanent loss of individuals and habitat, potential increased raven predation, potential harassment of individuals (noise and vibration)

  Mitigation Measures—High-quality habitat compensation; Environmental Mitigation Trust contribution—$1/ton; limits on individual deaths/removals; survey and monitor prior to and during construction/maintenance; relocate individuals from railroad bed; install culvert system and protective fence; preserve offsite habitat; implement raven control and monitoring; worker education

Bighorn Sheep

- *Potential Impact*—Loss of four water sources and habitat; potential indirect effects from residential Townsite population; potential disruption of sheep movement

  Mitigation Measures—Replacement of habitat through Environmental Mitigation Trust contribution ($1/ton); install three permanent water sources far from mine site to encourage bighorn sheep to use surrounding natural areas (these sites and their design to be approved by biologists at BLM and CDFG); purchase of additional lands; rehabilitate Buzzard Springs and clear of Tamarisk; if sheep are not naturally expanding their ranges to incorporate new sources, translocate them; preserve buffer habitat areas around landfill (644 acres); monitor sheep movement; conduct employee awareness program

Desert Pupfish

- *Potential Impact*—Potential habitat loss from rail accident or major construction on trestle over habitat; potential impacts to water quality resulting in fish kills

  Mitigation Measures—Annually monitor pupfish (by CDFG); if major construction is necessary, incorporate protective measures in plans and monitor construction/ maintenance activities; include biologist on emergency response team and restore any habitat disturbed by accident; locomotive fuel tank inspections prior to passage over Salt Creek; manual, nonchemical weed abatement; establish experimental population of pupfish; implement employee education program; implement provisions of Streambed Alteration Agreement

Sensitive Plant Species

- *Potential Impact*—Loss of 290 acres of foxtail cactus habitat

  Mitigation Measures—Conduct soil analyses and determine number of plants per acre; complete transplant program for lost cacti on suitable areas within Project boundary; monitor transplants once a month for one growing season; submit monitoring report to BLM, CDFG, and USFWS; Select staging and storage areas during rail repair/maintenance activities on basis of preconstruction surveys

Geology and Mineral Resources (Section 4.9)

- *Potential Impact*—Potential exists for settlement within alluvial soils, for expansive soils, and for surficial instability

  Mitigation Measures—Identify expansive soils in alluvial material within the landfill footprint and regrade, as necessary; determine the safe slope angles and maintain slopes within this range; identify need to flatten slopes or construct fill buttresses; excavate and/or recompact unsuitable soils prior to liner construction; place liner against safe slope angles

- *Potential Impact*—Potential ground shaking, fault rupture, liquefaction, slope instability, settlement

  Mitigation Measures—Design containment facilities to withstand a 6.5 Magnitude event located 5 miles from site and for an 8.0 Magnitude event on the San Andreas Fault; shear strength values will be specified for man-made slopes; remove loose alluvium and replace with compacted fill prior to construction facilities

Visual and Recreation (Section 4.10)

- *Potential Impact*—Potential for increased visual contrast with existing landscape

  Mitigation Measures—Blend the topographic contours of the landfill with adjacent landforms, and minimize color and tone contrast of the final cover; revegetation of the landfill will further reduce visual contrast impacts

- *Potential Impact*—The proposed Project will have a significant impact on the views from the community of Eagle Mountain; however, that impact will not be visible for several decades; visual contrast will be decreased over time

  Mitigation Measures—Phase project, revegetate disturbed areas, and revitalize Townsite

- *Potential Impact*—Potential for windblown debris and dust

  Mitigation Measures—Transport all refuse materials to the site and to the face of the landfill in closed containers, compacted and covered on a daily basis; water haul roads regularly; install fencing and regularly patrol for litter retrieval; develop an active storm and early warning procedure for extremely windy conditions and response plan to ensure timely and complete cleanup of accidental spills

- *Potential Impact*—Potential for significantly affecting the surrounding area by night lighting

  Mitigation Measures—Provide low-pressure sodium safety and security lights; direct lighting downward to light only the immediate area

Wilderness (Section 4.11)

Impacts to wilderness are evaluated in two categories in this EIS/EIR. "Wilderness as a resource" focuses on wilderness as a distinct resource (e.g., air, water). Potential impacts to wilderness resources are defined to include the range of potential impacts associated with the physical environment that comprise wilderness areas. Impacts to wilderness resources are

summarized in the individual resource categories discussed in this section and throughout Section 4.0, Environmental Consequences, of the EIS/EIR.

"Wilderness experience" focuses on wilderness as the personal experience of individuals in a setting of solitude. Unlike "wilderness resources," which can be measured according to objective standards, the quality of wilderness experience depends on subjective personal assessments that reflect varying degrees of sensitivity to particular impacts (e.g., noise) in a wilderness setting. Potential impacts to wilderness resources are assessed as a physical component of the wilderness experience. The human response to identifying and evaluating the wilderness experience, however, is not quantifiable or objectively measurable. Impacts to an individual's personal wilderness experience are discussed in Section 4.11, Wilderness, and below, under Impacts that Cannot be Mitigated.

Utilities and Services (Section 4.12)

Fire, Police, and Emergency Medical Services

- *Potential Impact*—No significant impacts were identified for police protection; significant fire protection impacts were identified due to inadequate staffing and water system capacity and flow

  Mitigation Measures—None required for police protection; obtain written agreement for fire protection services from the Riverside County Fire Department; submit a Fire/Life Safety and Emergency Response Plan to the Fire Department; install water mains and fire hydrants to provide the required fire flows; participate in the fire protection impact mitigation program as adopted by the Riverside County Board of Supervisors; obtain clearance from Riverside County Fire Department to reoccupy existing dwellings and buildings.

Noise (Section 4.13)

- *Potential Impact*—Rail (At Townsite [within 200 feet of the Eagle Mountain Railroad); Vehicle (Vehicle-related noise level increases at two commercial locations [Townsite and Kaiser Road]); Operation (Townsite receiver locations from equipment for moving waste from staging areas and intermodal rail yards, waste disposal and compaction, applying soil for cover; rail yard handling operations); Construction (temporary increase in noise levels during construction activities at some receivers, but all levels below the County of Riverside standards)

  Mitigation—Rail (Divide rail traffic between the rail yards after Rail Yard II completed; Send all nighttime train traffic to the Rail Yard II); Vehicle (Divert traffic along Kaiser Road to Rail Yard II; Restrict flow of nighttime truck traffic along Kaiser Road near Townsite; Prohibit heavy truck traffic to landfill during nighttime hours until Rail Yard II completed); Operation (restrict location of equipment to at least 6,000 feet from landfill boundary nearest Townsite during nighttime hours or

restrict work to daytime hours; Construction (although no significant impacts to nearby Townsite residences would occur, implement the following: Prohibit construction on Sundays and legal holidays, or between the hours of 7 p.m. and 7 a.m. on other days; For nighttime construction, group construction activities together, prohibit use of gasoline powered generators during construction activities, require all engine-powered equipment to have mufflers and all equipment to comply with pertinent equipment noise standards of Environmental Protection Agency; For specific noise complaints during construction, locate stationary construction equipment as far from nearby noise-sensitive properties as possible, notify nearby residents of planned noisy work conditions, use stock piles as effective noise barriers when feasible, shut off idling equipment, install temporary or portable acoustic barriers around stationary construction noise sources)

Paleontology (Section 4.15)

- *Potential Impact*—Excavations within portions of Eagle Mountain Mine and improvements to Eagle Mountain Road at the Interstate 10 exit have the potential to impact paleontologic resources; rehabilitation and maintenance of the rail line will not impact paleontologic resources

  Mitigation Measures—Pre-excavation survey, excavation monitoring; fossil preparation, identification, and storage, and preparation of a report by a qualified paleontologist; this report shall be submitted to Riverside County, BLM, and San Bernardino County Museum; rehabilitation and maintenance of the rail line will not require mitigation

Summary of Cumulative Impacts

Potential impacts occurring as a result of cumulative projects in the vicinity of the proposed Eagle Mountain Landfill operation depend upon future uses of the area, such as the possible resumption of mining activity or the construction of Eagle Crest Energy Company's proposed hydroelectric project. Regionally, continued residential development in and around Blythe and continued development of utilities are anticipated. Increased air emissions in both the South Coast Air Basin and the Southeast Desert Air Basin would be the most significant cumulative effect resulting from the proposed Project and other projects of a regional nature.

Implementation of the proposed Project is not anticipated to contribute to any cumulative impacts other than those associated with: (1) degradation of air quality; (2) mortality of some juvenile Desert Tortoise; (3) habitat loss for Alverson's Foxtail Cactus; and (4) increased regional water consumption, resulting in groundwater depletion from the ECEC's proposal to operate a pumped storage hydroelectric project or from agricultural water use. The cumulative impacts considered significant after mitigation are air quality (because the proposed Project is located within a nonattainment air basin) and groundwater use.

Impacts that Cannot be Mitigated

The projected increases in air emissions within the South Coast Air Basin resulting from the long-distance transport of solid waste and the incremental increase of emissions in the Southeast Desert Air Basin cannot be entirely avoided.

Impacts to resource components that comprise the wilderness experience (e.g., visual resources) can be quantitatively assessed using measurable significance standards based on CEQA guidelines and can be mitigated to a level below significance. The intangible components of the wilderness experience (e.g., peace, solitude), however, cannot be quantitatively evaluated. Because of the subjective nature of the intangible part of the wilderness experience, these qualitative indicators of an individual's personal feelings in a wilderness setting cannot be specifically defined using quantitative significance criteria. In the absence of significance criteria, CEQA requires a mandatory finding of significance.

Impacts to the California leaf-nosed bat and the Townsend's big-eared bat cannot be mitigated to below the level of significance. Even with the implementation of mitigation measures, the potential exists for a loss in the local populations of these species. Additional mitigation measures for these species, including identification and protection of suitable roosting and/or maternity habitat, could be identified on the basis of information collected during monitoring of summer and winter populations of these species using mitigation trust funds.

EAGLE MOUNTAIN LANDFILL AND RECYCLING CENTER

DRAFT ENVIRONMENTAL IMPACT STATEMENT/ ENVIRONMENTAL IMPACT REPORT

Table of Contents

Page Number

Title Page

Abstract

Letter from Bureau of Land Management

Executive Summary ES-1

1.0 Introduction

1.1 Historical Setting and General Project Description 1-2
- 1.1.1 Historical Mining Activity 1-5
- 1.1.2 Eagle Mountain Landfill 1-6
- 1.1.3 Eagle Mountain Townsite 1-6
- 1.1.4 Alternatives Considered in Detail 1-8

1.2 Previous Environmental Impact Statement and Environmental Impact Report 1-9
- 1.2.1 San Diego Superior Court Cases and Rulings on CEQA (Environmental Impact Report) Issues 1-10
- 1.2.2 Bureau of Land Management's Record of Decision for EIS 1-13
- 1.2.3 Major Differences Between Previous and Currently Proposed Project 1-15
- 1.2.4 Federal Role (Bureau of Land Management, Environmental Impact Statement) 1-15
- 1.2.5 County Role (Environmental Impact Report) 1-18

1.3 Project Purpose, Need, and Objectives 1-19
- 1.3.1 Project Purpose and Need 1-20
- 1.3.2 Project Objectives 1-31

1.4 Intended Uses of the Environmental Impact Report/Environmental Impact Statement and the and Project Approvals 1-33
- 1.4.1 General 1-33
- 1.4.2 Federal Approvals 1-33
- 1.4.3 State and Local Approvals 1-36
- 1.4.4 County of Riverside Approvals 1-39

1.5	Consultation and Coordination		1-40
	1.5.1	Public Scoping Process	1-40
	1.5.2	Cooperating Agencies	1-41
1.6	Impacts That Cannot Be Mitigated		1-41
1.7	Summary of Project Impacts, Mitigation, and Monitoring		1-41
1.8	Summary of Cumulative Impacts		1-42

2.0 Description of the Proposed Action and Alternatives

2.1	Proposed Action		2-2
	2.1.1	Land Exchange Between Bureau of Land Management and Kaiser (Bureau of Land Management, Environmental Impact Statement	2-3
	2.1.2	Federal Land Management Roads and Railroad Right-of-Way Grants (Bureau of Land Management, Environmental Impact Statement)	2-8
	2.1.3	County Land Use Approvals (County of Riverside, Environmental Impact Report)	2-14
	2.1.4	Proposed Landfill	2-19
	2.1.5	Design	2-25
	2.1.6	Landfill Development	2-42
	2.1.7	Landfill Operations	2-47
	2.1.8	Environmental Monitoring	2-55
2.2	No Action Alternative		2-59
2.3	Reduced Volume of Onsite Disposal Alternative		2-59
2.4	Alternate Road Access Alternative		2-59
2.5	Rail Access Only Alternative		2-60
2.6	Landfill on Kaiser Land Only Alternative		2-60
2.7	Landfill Development/No Townsite Development Alternative		2-62
2.8	Alternatives Considered but Eliminated from Further Consideration		2-63
	2.8.1	Landfill on Other Kaiser Property	2-63
	2.8.2	Waste Diversion	2-65
	2.8.3	Proposed Offsite Landfill Locations	2-65
	2.8.4	Landfill Mining	2-72
	2.8.5	Municipal Solid Waste Composting	2-76
	2.8.6	Alternative Townsite Locations	2-76

3.0 Affected Environment

3.1	Groundwater Quality and Use		3.1-1
	3.1.1	Regional Groundwater Occurrence and Flow	3.1-1
	3.1.2	Local Groundwater Occurrence and Flow	3.1-11
	3.1.3	Groundwater Quality	3.1-23
	3.1.4	Groundwater Use	3.1-25
3.2	Public Health and Safety		3.2-1
	3.2.1	Federal and State Laws Governing Uses of the Project Site	3.2-1
	3.2.2	Eagle Mountain Mine	3.2-8
	3.2.3	Townsite	3.2-14
	3.2.4	Fires	3.2-15
	3.2.5	Vectors	3.2-15
	3.2.6	Worker Safety	3.2-15
	3.2.7	Public Safety	3.2-16
3.3	Traffic and Transportation		3.3-1
	3.3.1	Rail Route	3.3-1
	3.3.2	Truck Routes	3.3-9
3.4	Air Quality		3.4-1
	3.4.1	Geography and Topography	3.4-1
	3.4.2	Climate and Meteorology	3.4-1
	3.4.3	Existing Air Quality and Trends	3.4-1
	3.4.4	Other Air Quality Issues	3.4-9
	3.4.5	Regulatory Setting	3.4-14
3.5	Land Use		3.5-1
	3.5.1	Existing Land Uses of the Project Site	3.5-1
	3.5.2	Existing Land Uses in the Vicinity of the Project Site	3.5-9
	3.5.3	Land Use Plans and Policies	3.5-15
3.6	Surface Water Drainage and Flooding		3.6-1
	3.6.1	Regional Setting	3.6-1
	3.6.2	Historical Drainage Patterns	3.6-1
	3.6.3	Existing Drainage Patterns	3.6-3
3.7	Biological Resources		3.7-1
	3.7.1	Regional Setting	3.7-1
	3.7.2	Vegetation	3.7-2
	3.7.3	Wildlife	3.7-10
	3.7.4	Biodiversity and Ecosystem Function	3.7-28

3.8	Growth Inducement and Socioeconomics		3.8-1
	3.8.1	Riverside County	3.8-1
	3.8.2	Regional Setting	3.8-3
3.9	Geology and Mineral Resources		3.9-1
	3.9.1	Soil and Geologic Conditions	3.9-4
	3.9.2	General Seismicity	3.9-17
	3.9.3	Mineral Resources	3.9-26
3.10	Visual and Recreation		3.10-1
	3.10.1	Visual Resources	3.10-1
	3.10.2	Windblown Debris and Dust	3.10-15
	3.10.3	Night Lighting	3.10-15
	3.10.4	Recreational Resources	3.10-15
3.11	Wilderness		3.11-1
	3.11.1	Court Ruling	3.11-2
	3.11.2	Coordination with Bureau of Land Management and National Park Service	3.11-2
	3.11.3	Definition of Wilderness	3.11-2
	3.11.4	Wilderness Management Authorities (Bureau of Land Management and National Park Service)	3.11-3
	3.11.5	Physical Setting	3.11-3
	3.11.6	Legislative Background	3.11-18
	3.11.7	Wilderness Management	3.11-21
3.12	Utilities and Services		3.12-1
	3.12.1	Water and Sewer Services	3.12-1
	3.12.2	Fire, Police, and Emergency Medical Services	3.12-2
	3.12.3	Utilities	3.12-2
	3.12.4	Community Facilities	3.12-3
	3.12.5	Solid Waste Disposal	3.12-4
3.13	Noise		3.13-1
	3.13.1	Noise Standards	3.13-1
	3.13.2	Noise Level Monitoring	3.13-3
	3.13.3	Department of Housing and Urban Development Standards	3.13-4
3.14	Cultural Resources		3.14-1
	3.14.1	Regional Setting	3.14-1
	3.14.2	Eagle Mountain Mine and BLM Exchange Lands	3.14-2
	3.14.3	Road and Rail Ways	3.14-3
	3.14.4	Kaiser Exchange Lands	3.14-3
	3.14.5	Additional Cultural Resources Inventory	3.14-3

3.15 Paleontology 3.15-1
3.15.1 Area North of Interstate 10 3.15-1
3.15.2 Area South of Interstate 10 3.15-2

3.16 Energy Consumption and Generation 3.16-1
3.16.1 Fossil Fuels 3.16-1
3.16.2 Utilities Serving the Project Area 3.16-1

4.0 Environmental Consequences

4.1 Groundwater Quality and Use 4.1-1
4.1.1 Standards of Significance 4.1-1
4.1.2 Groundwater Quality 4.1-4
4.1.3 Groundwater Use 4.1-24

4.2 Public Health and Safety 4.2-1
4.2.1 Standards of Significance 4.2-1
4.2.2 Solid Waste Stream and Hazardous Wastes 4.2-2
4.2.3 Landfill Gas and Landfill Gas Condensate 4.2-12
4.2.4 Fires 4.2-18
4.2.5 Vector Control 4.2-24
4.2.6 Worker Safety 4.2-28
4.2.7 Public Safety 4.2-29

4.3 Traffic and Transportation 4.3-1
4.3.1 Standards of Significance 4.3-1
4.3.2 Rail Transport 4.3-3
4.3.3 Roadways 4.3-9
4.3.4 Alternatives 4.3-24

4.4 Air Quality 4.4-1
4.4.1 Standards of Significance 4.4-1
4.4.2 Project Emissions and Impacts 4.4-2
4.4.3 Comparison of Alternatives 4.4-18

4.5 Land Use 4.5-1
4.5.1 Standards of Significance 4.5-1
4.5.2 Compatibility of the Project with Existing and Proposed Land Uses Within the Project Site 4.5-2
4.5.3 Compatibility of Project with Land Uses in the Immediate Vicinity 4.5-12
4.5.4 Consistency of Project with Land Use Plans and Policies 4.5-19

4.6	Surface Water Drainage and Flooding		4.6-1
	4.6.1	Standards of Significance	4.6-1
	4.6.2	Proposed Action	4.6-1
	4.6.3	No Action Alternative	4.6-5
	4.6.4	Reduced Volume of Onsite Disposal Alternative	4.6-6
	4.6.5	Alternate Road Access Alternative	4.6-6
	4.6.6	Rail Access Only Alternative	4.6-6
	4.6.7	Landfill on Kaiser Land Only Alternative	4.6-7
	4.6.8	Landfill Development/No Townsite Development Alternative	4.6-9
4.7	Biological Resources		4.7-1
	4.7.1	Standards of Significance	4.7-1
	4.7.2	San Diego Superior Court Ruling on Previous EIR	4.7-1
	4.7.3	Proposed Action	4.7-2
	4.7.4	Biodiversity and Ecosystem Function	4.7-36
	4.7.5	No Action Alternative	4.7-38
	4.7.6	Reduced Volume of Onsite Disposal Alternative	4.7-39
	4.7.7	Alternate Road Access Alternative	4.7-39
	4.7.8	Rail Access Only Alternative	4.7-39
	4.7.9	Landfill on Kaiser Land Only Alternative	4.7-39
	4.7.10	Landfill Development/No Townsite Development Alternative	4.7-40
4.8	Growth Inducement and Socioeconomics		4.8-1
	4.8.1	Standards of Significance	4.8-1
	4.8.2	Growth Inducement and Socioeconomics	4.8-3
	4.8.3	Impacts to Minorities and Low-Income Populations	4.8-6
4.9	Geology and Mineral Resources		4.9-1
	4.9.1	Standards of Significance	4.9-1
	4.9.2	Soils and Geologic Conditions	4.9-3
	4.9.3	Seismic Hazards	4.9-7
	4.9.4	Mineral Resources	4.9-21
4.10	Visual and Recreation		4.10-1
	4.10.1	Standards of Significance	4.10-1
	4.10.2	Visual Resources	4.10-3
	4.10.3	Windblown Debris, Visibility, and Dust	4.10-38
	4.10.4	Nighttime Lighting	4.10-42
	4.10.5	Recreational Resources	4.10-46
4.11	Wilderness		4.11-1
	4.11.1	Standards of Significance	4.11-2
	4.11.2	San Diego Superior Court Ruling on Previous EIR	4.11-4
	4.11.3	Proposed Action	4.11-4
	4.11.4	No Action Alternative	4.11-14

	4.11.5	Reduced Volume of Onsite Disposal Alternative	4.11-15
	4.11.6	Alternate Road Access Alternative	4.11-15
	4.11.7	Rail Access Only Alternative	4.11-16
	4.11.8	Landfill on Kaiser Land Only Alternative	4.11-16
	4.11.9	Landfill Development/No Townsite Development Alternative	4.11-17
4.12	Utilities and Services		4.12-1
	4.12.1	Standards of Significance	4.12-1
	4.12.2	Water and Sewer	4.12-2
	4.12.3	Fire, Police, and Emergency Medical Services	4.12-7
	4.12.4	Utilities	4.12-10
	4.12.5	Community Facilities	4.12-13
	4.12.6	Solid Waste Disposal	4.12.15
4.13	Noise		4.13-1
	4.13.1	Standards of Significance	4.13-1
	4.13.2	Rail	4.13-2
	4.13.3	Vehicle	4.13-9
	4.13.4	Landfill Operations	4.13-16
	4.13.5	Landfill Construction	4.13-23
	4.13.6	Combined Noise Impacts	4.13-30
	4.13.7	Non-Human Noise Sensitive Receptors	4.13-35
4.14	Cultural Resources		4.14.1
	4.14.1	Standards of Significance	4.14.1
	4.14.2	Cultural Resources Assessment	4.14.2
4.15	Paleontology		4.15-1
	4.15.1	Standards of Significance	4.15-1
	4.15.2	Paleontological Assessment	4.15-1
4.16	Energy Consumption and Generation		4.16-1
	4.16.1	Standards of Significance	4.16-1
	4.16.2	Proposed Action	4.16-1
	4.16.3	No Action Alternative	4.16-5
	4.16.4	Reduced Volume of Onsite Disposal Alternative	4.16-6
	4.16.5	Alternate Road Access Alternative	4.16-6
	4.16.6	Rail Access Only Alternative	4.16-7
	4.16.7	Landfill on Kaiser Land Only Alternative	4.16-8
	4.16.8	Landfill Development/No Townsite Development Alternative	4.16-8

5.0 Cumulative Impacts

5.1 San Diego Superior Court Ruling on Previous EIR 5-3

5.2 Cumulative Impacts Analysis 5-3
5.2.1 Other Actions/Projects Included in the Cumulative Impacts Analysis 5-4
5.2.2 Scope of the Cumulative Impacts Analysis 5-4
5.2.3 Timing and Duration of Other Actions/Projects 5-4
5.2.4 Future Time Horizons 5-5
5.2.5 Cumulative Projects Data and Information 5-5
5.2.6 Reasonable Forecast Analysis 5-6

5.3 Methods Used For Identifying Other Past, Present, and Reasonably Foreseeable Actions/Projects 5-6

5.4 List of Past, Present, and Reasonably Foreseeable Actions/Projects and Respective Environmental Impacts 5-6
5.4.1 Other Actions/Projects Within the Vicinity of the Proposed Eagle Mountain Project 5-7
5.4.2 Desert Region Comparable Landfill Projects in Southern California 5-25

5.5 Cumulative Environmental Impacts and Mitigation 5-33
5.5.1 Criteria for Determining Cumulative Impact Significance 5-33
5.5.2 Potential Cumulative Impacts 5-36

6.0 Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

6.1 Short-term Environmental Goals and Effects 6-1

6.2 Long-Term Environmental Goals and Effects 6-1
6.2.1 Groundwater Quality 6-2
6.2.2 Biological Resources 6-2
6.2.3 Public Health and Safety 6-4

7.0 Significant Irreversible Environmental Changes

8.0 List of Preparers

9.0 References

10.0 Glossary and Index

APPENDICES

Volume I

A Public Scoping Documents and Superior Court Statement of Decision
- A-1 Scoping Material
- A-2 Statement of Decision
- A-3 Correspondence
- A-4 Legal Description of Site
- A-5 Recipients of Draft EIS/EIR

B Project Description Supporting Information
- B-1 List of Federal and State Regulations for the Design and Operation of MSW Landfills
- B-2 BLM Land Use Classification
- B-3 IBLA Stay
- B-4 Bid Sheets
- B-5 Construction Considerations

C Updated Groundwater Analysis
- C-1 Technical Memorandum
- C-2 Technical Advisory Panel Report
- C-3 Reliability and Performance of Engineered Ground-Water Protection Systems Report
- C-4 Ground-Water Investigation and Monitoring Summary Report
- C-5 The Potential for Gas Generation and Leachate Production at the Proposed Eagle Mountain Landfill

D Traffic Impact Analysis

E Air Quality Impact Section for the Eagle Mountain Landfill and Recycling Center

Volume II

F Updated Hydrology Report

G Biological Technical Report

H Seismicity Case Studies and Related Data
- H-1 Seismic Information Summary Report
- H-2 Assessment of Landfill Performance in Recent Earthquakes
- H-3 Faults and Micro-Seismicity Investigations and Conclusions, Proposed Eagle Mountain Landfill Site
- H-4 Summary of Information on the Absence of Holocene Fault Displacement

H-5 Geomorphic and Soil Stratigraphic Assessments, Alluvial Deposits, Proposed Eagle Mountain Landfill Site

I Visual Analysis

J Noise Analysis Methodology

K Updated Cultural Resources Survey
- K-1 Cultural Resource Investigation, Eagle Mountain Townsite
- K-2 Cultural Resource Survey of the Eagle Mountain Mine and the Kaiser Industrial Railroad
- K-3 An Assessment of the Potential National Register Eligibility of the Eagle Mountain Mine

L Updated Paleontological Resource Assessment

M Revised Mitigation Monitoring Program

List of Tables

1-1	Court Issues for Previous Environmental Impact Report Location in EIS/EIR	1-12
1-2	Examples of Existing and Planned Materials Recovery Facilities and Transfer Stations Within the Area	1-14
1-3	Eagle Mountain Landfill and Recycling Center Summary of Major Differences Between Proposed Project and Currently Proposed Project	1-16
1-4	Projected Waste Disposal of Seven-County Wasteshed	1-26
1-5	Eagle Mountain Landfill and Recycling Center EIS/EIR Required Permits and Approvals	1-34
1-6	Summary of Project and Alternatives' Impacts and Mitigation	1-43
2-1	Projected Volumes of Waste and Mode of Transport to Eagle Mountain Landfill	2-19
2-2	Capacity of the Eagle Mountain Landfill for Each Phase of Development	2-25
2-3	Summary of the Components of the Landfill Liner Design That Exceed Regulatory Requirements	2-29
2-4	Components of Landfill Cover Design That Exceed Regulatory Requirements	2-39
2-5	Comparison of Eagle Mountain, Mesquite, and Rail Cycle Proposed Landfills	2-66
3.1-1	Estimated Total Volume of Groundwater in Storage in the Groundwater Basins Surrounding the Project Site	3.1-8
3.1-2	Hydraulic Conductivity of the Bedrock Aquifer at the Project Site	3.1-12
3.1-3	Estimated Groundwater Pumpage in the Western Chuckwalla Basin in Acre-Feet	3.1-24

3.3-1	Rail Line Segment Characteristics	3.3-4
3.3-2	Existing At-grade Crossing Locations Along Southern Pacific Railroad	3.3-8
3.3-3	Level of Service Definitions for Roadway Segments (Unsignalized Intersections)	3.3-12
3.3-4	1995 Existing Conditions Roadway Segment Level of Service (LOS) Analysis Summary	3.3-12
3.3-5	Level of Service Definitions for Signalized Intersections	3.3-14
3.3-6	1995 Existing Conditions Intersection Level of Service (LOS) Analysis Summary	3.3-15
3.4-1	Air Quality Levels Measured in the Southeast Desert Air Basin	3.4-5
3.4-2	Fine Particulate (PM_{10}) Levels in Southeast Desert Air Basin 1984-1994	3.4-6
3.4-3	Ozone Levels in the South Coast Air Basin 1984-1994	3.4-7
3.4-4	Nitrogen Dioxide Levels in the South Coast Air Basin 1984-1994	3.4-7
3.4-5	PM_{10} Levels in the South Coast Air Basin 1984-1994	3.4-8
3.4-6	Ozone Levels in the Joshua Tree National Park and Project Site 1985-1994	3.4-9
3.7-1	Special-Status Plant Species Occurring or Potentially Occurring in the Proposed Project Area	3.7-6
3.7-2	Special-Status Vertebrate Wildlife Species Occurring or Potentially Occurring in the Project Area	3.7-12
3.8-1	Riverside County Population Data (1990)	3.8-1
3.8-2	Riverside County Employment Data, Employed Persons 16 Years and Older (1990)	3.8-2
3.8-3	Riverside County Poverty Status Data, Persons for Whom Poverty Status is Determined (1989)	3.8-2
3.8-4	Chuckwalla Subdivision Population Data (1990)	3.8-3
3.8-5	Chuckwalla Subdivision Employment Data, Employed Persons 16 Years and Over (1990)	3.8-5
3.8-6	Chuckwalla Subdivision Poverty Status Data, Persons for Whom Poverty Status is Determined (1989)	3.8-6
3.9-1	Report of Waste Discharge Geologic Studies in the Vicinity of the Proposed Project	3.9-2
3.9-2	Eagle Mountain Geologic Ore Reserves (as of January 1, 1983)	3.9-28
3.9-3	Eagle Mountain Mine Open Pit Reserves Remaining in the Final Pit Design	3.9-31
3.10-1	Eagle Mountain Project Area Scenic Quality	3.10-5
3.10-2	Key Observation Points (KOPs), Distance Zones, and Sensitivity Levels	3.10-9
3.10-3	Project Site Visual Resource Classification Summary Table	3.10-14
3.13-1	Summary of Monitoring Locations and Land Use	3.13-5
3.13-2	Noise Monitoring Results in Terms of L_{eq} and CNEL	3.13-5

3.13-3	Modeled Existing Vehicular Traffic Noise Level Conditions in Terms of L_{eq} and CNEL	3.13-8
3.13-4	Southern Pacific Main Line CNEL Noise Levels at Four Distances from the Track Centerline	3.13-10
4.1-1	Summary of Maximum Annual Water Use by the Proposed Project	4.1-25
4.1-2	Results of Approximations of Groundwater Level Declines	4.1-29
4.3-1	Rail Routes from Key Route Interchanges to Eagle Mountain Landfill	4.3-6
4.3-2	Average Daily Delays Caused by Shipments from Each Route Interchange	4.3-6
4.3-3	Townsite Trip Generation Summary	4.3-13
4.3-4	Year 2000 Roadway Level-of-Service Summary	4.3-20
4.3-5	Year 2005 Roadway of Level-of-Service Summary	4.3-20
4.3-6	Year 2010 Roadway Level-of-Service Summary	4.3-20
4.3-7	Year 2000 Roadway Level-of-Service Summary	4.3-21
4.3-8	Year 2005 Intersection Level-of-Service Summary	4.3-21
4.3-9	Year 2010 Intersection Level-of-Service Summary	4.3-22
4.4-1	Standards of Significance Summary	4.4-1
4.4-2	Total Emissions—Initial Construction Projects	4.4-3
4.4-3	Total Project Emissions, Proposed Project With Mitigation	4.4-5
4.4-4	Eagle Mountain Landfill and Recycling Center, Proposed Project Without Mitigation, Ambient Air Quality Impacts	4.4-5
4.4-5	Eagle Mountain Landfill and Recycling Center, Proposed Project Without Mitigation, Air Quality Impacts at Rail Crossings	4.4-6
4.4-6	Eagle Mountain Landfill and Recycling Center, Proposed Project With Mitigation, Air Quality Impacts at Rail Crossings	4.4-7
4.4-7	Eagle Mountain Landfill and Recycling Center, Project Impacts on Joshua Tree National Park	4.4-7
4.4-8	Eagle Mountain Landfill and Recycling Center, Odorous Compounds–Landfill Surface	4.4-12
4.4-9	Eagle Mountain Landfill and Recycling Center, Odorous Compounds–Landfill Surface	4.4-12
4.4-10	Mitigation Measures Recommended for Project Approval	4.4-13
4.4-11	Eagle Mountain Landfill and Recycling Center, Total Project Emissions, Proposed Project With Mitigation	4.4-14
4.4-12	Eagle Mountain Landfill and Recycling Center, Ambient Air Quality Impacts, Proposed Project With Mitigation	4.4-15
4.7-1	Percent Core Conditions Found in 101 California and 70 Nevada Opinions That Have Been Implemented	4.7-30
4.7-2	Number of Opinions for Which "Other Conditions" are Required	4.7-31
4.8-1	Population Data (Percent), (U.S. Census Bureau—1990)	4.8-8

4.9-1	Seismic Response of Solid Waste Landfills During the January 17, 1994, Northridge Earthquake	4.9-12
4.10-1	Key Observation Points, Distance Zones, and Description of Views	4.10-4
4.10-2	Key Observation Points: Visual Contrast Ratings Comparison of Existing Conditions with Proposed Project (Landfill Operations and Final Closure)	4.10-33
4.12-1	Total Initial Construction Water	4.12-3
4.12-2	Maximum Year Operations Water Use	4.12-4
4.13-1	Noise Level Comparison of Existing and Predicted Project-Generated Rail Traffic along the Southern Pacific Railroad	4.13-3
4.13-2	Predicted Rail Noise Levels Along Eagle Mountain Railroad	4.13-3
4.13-3	Maximum Noise Levels from Rail Yard Operations	4.13-4
4.13-4	Predicted Mitigated Rail Noise Levels Along Eagle Mountain Railroad	4.13-6
4.13-5	Noise Level Comparison of Vehicular Traffic for the Existing Conditions, the No Action Alternative, and the Proposed Action without Mitigation	4.13-10
4.13-6	Noise Level Comparison of Vehicular Traffic for the Existing Conditions and the Proposed Action with Mitigation	4.13-12
4.13-7	Noise Level Comparison of Vehicular Traffic for the Existing Conditions, the No Action Alternative, and the Alternate Access Road Alternative without Mitigation	4.13-15
4.13-8	Maximum Noise Levels from Landfill Equipment	4.13-17
4.13-9	Maximum Noise Levels from Container Handling Equipment	4.13-18
4.13-10	Landfill Operational Noise Levels at Nearby Noise Sensitive Receiver (Combined Noise Level with Both Rail Yards Operating)	4.13-19
4.13-11	Mitigated Landfill Operational Noise Levels at Nearby Noise Sensitive Receivers (Combined Noise Level with Both Rail Yards Operating)	4.13-20
4.13-12	Estimated Construction Equipment Noise Levels for Landfill	4.13-24
4.13-13	Maximum Noise Levels During Construction of Landfill	4.13-25
4.13-14	Estimated Construction Equipment Noise Levels for Ancillary Facilities	4.13-25
4.13-15	Estimated Noise Levels During Construction of Ancillary Facilities	4.13-26
4.13-16	Combined Noise Level Comparison of the Existing Conditions, the No Project Alternative, and the Proposed Action with Mitigation	4.13-32
4.16-1	Estimated Daily Fuel Consumption for Heavy Equipment Operation, Proposed Action	4.16-4
5-1	Major Features of the Proposed ECEC Hydroelectric Project	5-8
5-2	Status and Potential Impacts of the Proposed ECEC Hydroelectric Project	5-10
5-3	Potential Impacts of Projects Proposed by National Park Service as part of the Joshua Tree National Park General Management Plan	5-20
5-4	National Park Service Actions Proposed as part of the Management Plan for Cultural and Natural Resources	5-22

5-5	Potential Impacts of National Park Service Actions Proposed as Documented in the General Management Plan EIS for Joshua Tree National Park (May 1995)	5-23
5-6	Potential Impacts of the La Paz County Regional Landfill	5-28
5-7	Potential Impacts of the Rail Cycle-Bolo Station Landfill	5-31
5-8	Potential Impacts of the Mesquite Regional Landfill	5-34
5-9	Eagle Mountain Landfill and Recycling Center Cumulative Impacts for Proposed Project With Mitigation	5-44
5-10	Comparison of Total Project Emissions (on- and offsite) per Ton of Solid Waste	5-45
5-11	Comparison of Rail Emissions for Various Projects	5-46
5-1	Major Features and Potential Impacts of the Proposed Eagle Crest Hydroelectric Project	5-7
5-2	Projects Proposed by NPS as part of the Joshua Tree National Park General Management Plan	5-9
5-3	NPS Actions Proposed as part of the Management Plan for Cultural and Natural Resources	5-18
5-4	Potential Impacts of the La Paz Hazardous Waste Repository	5-21
5-5	Potential Impacts of the Rail Cycle-Bolo Station Landfill	5-22
5-6	Potential Impacts of the Mesquite Regional Landfill	5-26
5-7	Eagle Mountain Landfill and Recycling Center Cumulative Impacts for Proposed Project With Mitigation	5-29
5-8	Comparison of Total Project Emissions (on- and offsite) per Ton of Solid Waste	5-32
5-9	Comparison of Rail Emissions for Various Projects	5-39
5-10	Comparison of Total Project Emissions	5-40
5-11	Comparison of Rail Emissions for Various Projects	5-40

List of Figures

1-1	Regional Setting	1-3
1-2	Eagle Mountain Site Location	1-4
1-3	Liner System for Proposed Landfill	1-17
1-4	Combined Projected Disposal Capacity Needs and Available Capacity (1995-2020) for the Seven-county Wasteshed Area	1-25
2-1	Lands Proposed to be Exchanged (From BLM to Kaiser)	2-5
2-2	Lands Proposed to be Exchanged (Offered from Kaiser to BLM)	2-6
2-3	Lands Proposed to be Exchanged (From Kaiser to BLM)	2-7
2-4	Existing Eagle Mountain Road Alignment	2-10
2-5	Eagle Mountain Road Extension and Railroad Right-of-Way (Rail Yard I)	2-11
2-6	Road and Rail Features of Eagle Mountain Road Extension (Rail Yard II)	2-12
2-7	Townsite Planning Areas	2-17

2-8	Landfill Planning Areas	2-23
2-9	Schematic of Landfill Liner System	2-27
2-10	Leachate Collection and Removal (Schematic of Overall System)	2-31
2-11	Schematic of Leachate Collection and Removal System (bottom of landfill)	2-32
2-12	Schematic of Leachate Collection and Removal in Sumps	2-33
2-13	Schematic of Landfill Gas Extraction Well (Horizontal)	2-35
2-14	Schematic of Landfill Gas Extraction Well (Vertical)	2-36
2-15	Schematic of Final Cover System	2-38
2-16	Phases of Landfill Construction	2-43
2-17	Typical Offloading Operation	2-50
2-18	Typical Daily Operations at Active Working Areas	2-53
2-19	Final Contours of the Landfill	2-58
2-20	Landfill Footprint On Kaiser-owned Land Only	2-61
3.1-1	Chuckwalla Valley Groundwater Basin	3.1-2
3.1-2	Groundwater Basins in Southeastern California	3.1-3
3.1-3	Springs in the Northern Eagle Mountains	3.1-6
3.1-4	Groundwater-Surface Elevations in the Chuckwalla Basin	3.1-9
3.1-5	Groundwater Monitoring Points in the Vicinity of the Project Site	3.1-14
3.1-6	Groundwater-Surface Elevations in the Vicinity of the Project Site	3.1-15
3.1-7	East-West Cross Section through the Proposed Landfill Footprint	3.1-17
3.1-8	North-South Cross Sections through the Proposed Landfill Footprint	3.1-19
3.1-9	Water Wells in the Western Chuckwalla Basin	3.1-28
3.2-1	BLM Level I Contaminant Survey of Project Site	3.2-9
3.2-2	Areas Investigated by Department of Toxic Substances Control	3.2-10
3.3-1	Rail Line Analysis Segments	3.3-3
3.3-2	Existing (1995) Average Daily Traffic	3.3-10
3.4-1	Southeast Desert Air Basin	3.4-2
3.4-2	Wind Speeds, 1990-91	3.4-3
3.4-3	Interbasin Transport Between South Coast and Southeast Desert Air Basins	3.4-12
3.5-1	Major Features of the Eagle Mountain Mine	3.5-3
3.5-2	Major Features of the Townsite	3.5-7
3.5-3	Existing Land Uses in the Vicinity of the Proposed Project	3.5-11
3.5-4	BLM Multiple-Use Classes Adjacent to Kaiser-Owned Lands	3.5-18
3.5-5	Bureau of Land Management Areas of Critical Environmental Concern in the Vicinity of the Proposed Project Site	3.5-21
3.5-6	Existing Land Use Designation of Proposed Project Site	3.5-24
3.5-7	Zoning in the Vicinity of the Proposed Project Site	3.5-25
3.6-1	Eagle Mountain Existing Drainage Patterns	3.6-2

3.7-1	Project Area Plant Communities and Plant Species: Project Site and Vicinity	3.7-3
3.7-2	Project Area Plant Communities: Kaiser Road and Eagle Mountain Road	3.7-9
3.7-3	Distribution of Special Status Wildlife Species: Project Site and Immediate Vicinity	3.7-17
3.7-4	Distribution of Special Status Wildlife Species: Kaiser Road and Eagle Mountain Road	3.7-18
3.7-5	General Distribution of Desert Tortoise: South of I-10 to Project Site	3.7-21
3.7-6	Habitat Management Areas for Nelson's Bighorn Sheep	3.7-29
3.8-1	Chuckwalla Land Use Planning Area	3.8-4
3.9-1	Regional Geologic Map	3.9-7
3.9-2(a)	Local Geologic Map	3.9-9
3.9-2(b)	Local Geologic Map Legend	3.9-11
3.9-3	Alluvium Map	3.9-13
3.9-4	Geologic Cross Sections	3.9-15
3.9-5	Local Fault Map	3.9-18
3.9-6	Earthquake Epicenters Map	3.9-20
3.9-7(a)	Regional Fault Map	3.9-21
3.9-7(b)	Regional Fault Map Legend	3.9-23
3.9-8	Location of Ore Reserve Areas	3.9-29
3.10-1	Project Vicinity Landscape Units and Scenic Quality Rating	3.10-2
3.10-2	Project Vicinity Viewshed, Key Observation Points, and Viewing Distances	3.10-3
3.10-3	Visual Resource Management Classes	3.10-13
3.10-4	Major Recreational Areas of Joshua Tree National Park	3.10-18
3.11-1	California Desert Conservation Area: Context for BLM and NPS Management of Federal Lands	3.11-5
3.11-2	BLM Palen/McCoy Wilderness	3.11-6
3.11-3	BLM Chuckwalla Mountains Wilderness	3.11-7
3.11-4	BLM Orocopia Mountains Wilderness	3.11-9
3.11-5	BLM Mecca Hills Wilderness	3.11-10
3.11-6	Land Classification for Joshua Tree National Monument	3.11-11
3.11-7	Eagle Mountain Wilderness Study Area	3.11-13
3.11-8	Coxcomb Mountains Wilderness Study Area	3.11-14
3.11-9	Joshua Tree National Park Proposed Visitor Experience/Resource Protection Zones	3.11-15
3.13-1	Land Use Compatibility for Community Noise	3.13-3
3.13-2	Noise Monitoring Locations	3.13-4
3.13-3	Noise Receiver Locations	3.13-7

4.1-1	Schematic Representation of Standard of Significance for Water-Level Decline in an Existing Well	4.1-3
4.1-2	Regional Groundwater Flow and Proposed Project Site Relative to the Colorado River and the Salton Sea	4.1-20
4.1-3	Location of Project Wells and Closest Non-Project Water Supply Wells	4.1-28
4.3-1	Proposed Roadway and Railroad Access to Project Site	4.3-4
4.3-2	Key Route Interchanges Along the Major Rail Line Segments	4.3-5
4.3-3	Roadways in the Seven County Wasteshed Area	4.3-10
4.3-4	Project Trip Directional Distribution (Townsite)	4.3-12
4.3-5	Forecast 2000 Average Daily Traffic (With Project)	4.3-14
4.3-6	Forecast 2000 Peak Hour Traffic Volumes (With Project)	4.3-15
4.3-7	Forecast 2005 Average Daily Traffic (With Project)	4.3-16
4.3-8	Forecast 2005 Peak Hour Traffic Volumes (With Project)	4.3-17
4.3-9	Forecast 2010 Average Daily Traffic (With Project)	4.3-18
4.3-10	Forecast 2010 Peak Hour Traffic Volumes (With Project)	4.3-19
4.4-1	Regional NOx Emissions Impact (Emissions in Tons/Year)	4.4-20
4.4-2	Regional CO Emissions Impact (Emissions in Tons/Year)	4.4-21
4.4-3	Regional PM_{10} Emissions Impact (Emissions in Tons/Year)	4.4-22
4.4-4	Regional VOC Emissions Impact (Emissions in Tons/Year)	4.4-23
4.4-5	Regional SO_2 Emissions Impact (Emissions in Tons/Year)	4.4-24
4.6-1	Surface Water Drainage for Proposed Project	4.6-3
4.6-2	Surface Water Drainage on Kaiser-owned Land Only	4.6-8
4.10-1	KOP No. 2	4.10-9
4.10-2	KOP No. 5	4.10-11
4.10-3	KOP No. 1	4.10-15
4.10-4	KOP No. 2	4.10-17
4.10-5	KOP No. 3	4.10-21
4.10-6	KOP No. 4	4.10-23
4.10-7	KOP No. 5	4.10-25
4.10-8	KOP No. 6	4.10-27
4.10-9	KOP No. 7	4.10-29
4.10-10	KOP No. 8	4.10-31
4.13-1	Noise Monitoring and Receiver Locations	4.13-5
5-1	Proposed Eagle Crest Energy Company Hydroelectric Project	5-12
5-2	Major Existing and Proposed Landfills in Proposed Wasteshed Area	5-13
5-3	Major Existing and Proposed Landfills in Proposed Wasteshed Area	5-26

1.0 Introduction

This Environmental Impact Statement/Environmental Impact Report (EIS/EIR) addresses the potential environmental impacts that could result from implementing the proposed Eagle Mountain Landfill and Recycling Center Project (Eagle Mountain Project [Project]). The EIS/EIR been prepared in accordance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The United States Department of the Interior, Bureau of Land Management (BLM), is the lead federal agency for the NEPA process. The County of Riverside is the lead agency for the CEQA process. These agencies have independently evaluated, directed, and supervised the preparation of this document. The National Biological Service (NBS) and the National Park Service (NPS) have participated as cooperating federal agencies under NEPA.

The proposed federal action requiring the preparation of an EIS under NEPA comprises two elements. The first is the land exchange between Kaiser Eagle Mountain, Inc. (Kaiser) and the BLM; the second is the issuance of right-of-way grants to Kaiser by the BLM. Under CEQA, the proposed land use approvals to be considered by the County require the preparation of an EIR. In addition, state agencies responsible for approval of permits associated with the proposed Project are required to determine either that a certified EIR for the Project is acceptable for their purposes or to prepare their own environmental documentation.

A Writ of Mandate was issued in 1994 to the County of Riverside (County) by the San Diego County Superior Court (Court) in reference to the EIR previously certified as part of the *Proposed Eagle Mountain Landfill and Recycling Center Project* (BLM and County of Riverside, June 1992). The previous EIR had been certified by the Riverside County Board of Supervisors in November 1992 (State Clearinghouse No. 8908413).

In the Writ, the Court directed the County to prepare a new EIR to address specific deficiencies of the previous EIR prepared for the proposed Eagle Mountain Landfill and Recycling Center Project. After it was determined that a new EIR was to be prepared by the County in accordance with the Court decision, the Interior Board of Land Appeals (IBLA) in the U.S. Department of the Interior, which was considering challenges to the previous EIS, remanded the case to the BLM at the BLM's request, thus allowing the BLM to join the County in the preparation of a new joint EIS/EIR. (The previous EIS/EIR is discussed in Section 1.2.) This document responds to specific deficiencies in the previous EIR that were identified by the Court (see Section 1.2.1) to: (1) disclose the potentially significant environmental impacts of the proposed Project, (2) identify ways to avoid or reduce significant adverse environmental impacts, and (3) identify mitigation measures and/or alternatives that would reduce potentially significant impacts to a level of insignificance. In addition, the EIS/EIR presents, when applicable, updated information on existing conditions in instances where conditions have changed since certification of the previous EIS/EIR.

1.1 Historical Setting and General Project Description

Mine Reclamation Corporation (MRC) and Kaiser Eagle Mountain Inc., a wholly-owned subsidiary of Kaiser Ventures Inc., propose to develop the Eagle Mountain Project on a portion of the Kaiser Eagle Mountain Mine in the County of Riverside, California. Kaiser owns portions of the Project site in fee; the portions of the site not owned in fee by Kaiser are owned by the United States Government and administered by the BLM. Kaiser also holds unpatented mining claims on portions of the land administered by the BLM. The BLM lands within the Project site are proposed to be conveyed in fee to Kaiser by the BLM as part of the land exchange. (These exchange lands are discussed and illustrated in Section 2.1.1.)

The Eagle Mountain Project comprises two major features: (1) a Class III nonhazardous municipal solid waste landfill (Eagle Mountain Landfill) proposed to be operated by MRC; and (2) the resulting renovation and subsequent repopulation of the existing, adjacent Eagle Mountain Townsite (Townsite) owned by Kaiser. The landfill will receive waste primarily by rail. To effect the proposed Project, the proposed action involves the approval of a land exchange between Kaiser and BLM, the issuance of two right-of-way grants from the BLM to Kaiser, and the approval of land use applications for the landfill and the Townsite by the County. Figures 1-1 and 1-2 show the regional setting and the site location, respectively, of the Eagle Mountain Project. Kaiser has leased a portion of the mine site to MRC for the development and operation of the Eagle Mountain Landfill.

1.1.1 Historical Mining Activity

The Eagle Mountain open-pit iron-ore mine was operated by Kaiser Steel Corporation (a predecessor of Kaiser Ventures Inc.) on a full-time basis from 1948 to 1983. During that time, Kaiser recovered from four pits (i.e., East Pit, Central Pit, Black Eagle Pit [North], and Black Eagle Pit [South]) over 940 million tons of material, consisting of approximately 228 million tons of crude ore and 712 million tons of waste rock at rates of up to 59 million tons of material annually. From that crude ore, approximately 114 million tons of marketable concentrates were produced onsite and shipped from the property for steel making. The waste rock (i.e., randomly sized, non-iron-bearing rock that was excavated to gain access to the iron ore) remains onsite in overburden (waste) piles or disposal areas adjacent to the mining pits. The fine mine tailings, which comprise sand, silt, and clay remaining from the mined materials resulting from the ore concentrating operations, remain in the impoundments constructed onsite. Although full-time operation of the mine was curtailed in 1983, Kaiser continues to engage in mining-related activities, including the sale and shipment of overburden as crushed rock and mixed rock product, the maintenance of equipment and roads, and the administration of Kaiser's mining claims. Kaiser's Eagle Mountain rail line was used for two shipments of iron ore in March 1993. The specific land use zoning of the mine site is discussed in Section 3.5, Land Use.

Over 5,500 acres of the mine site were disturbed by Kaiser Steel's mining operations. Although the disturbance predates the California Surface Mining and Reclamation Act (SMARA), a reclamation plan for the mine site was developed by Kaiser Steel in 1976 in

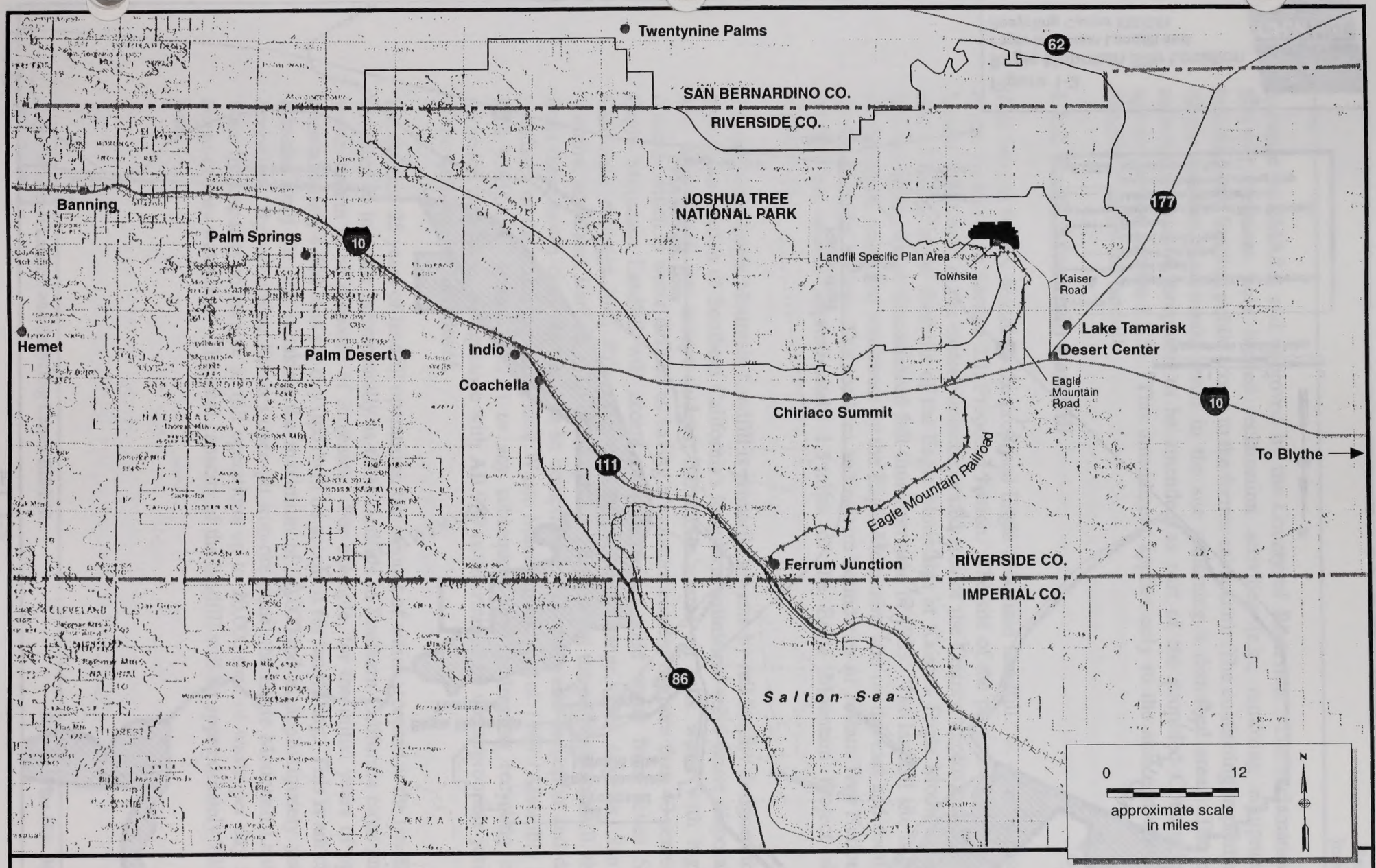


Figure 1-1
Regional Setting
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

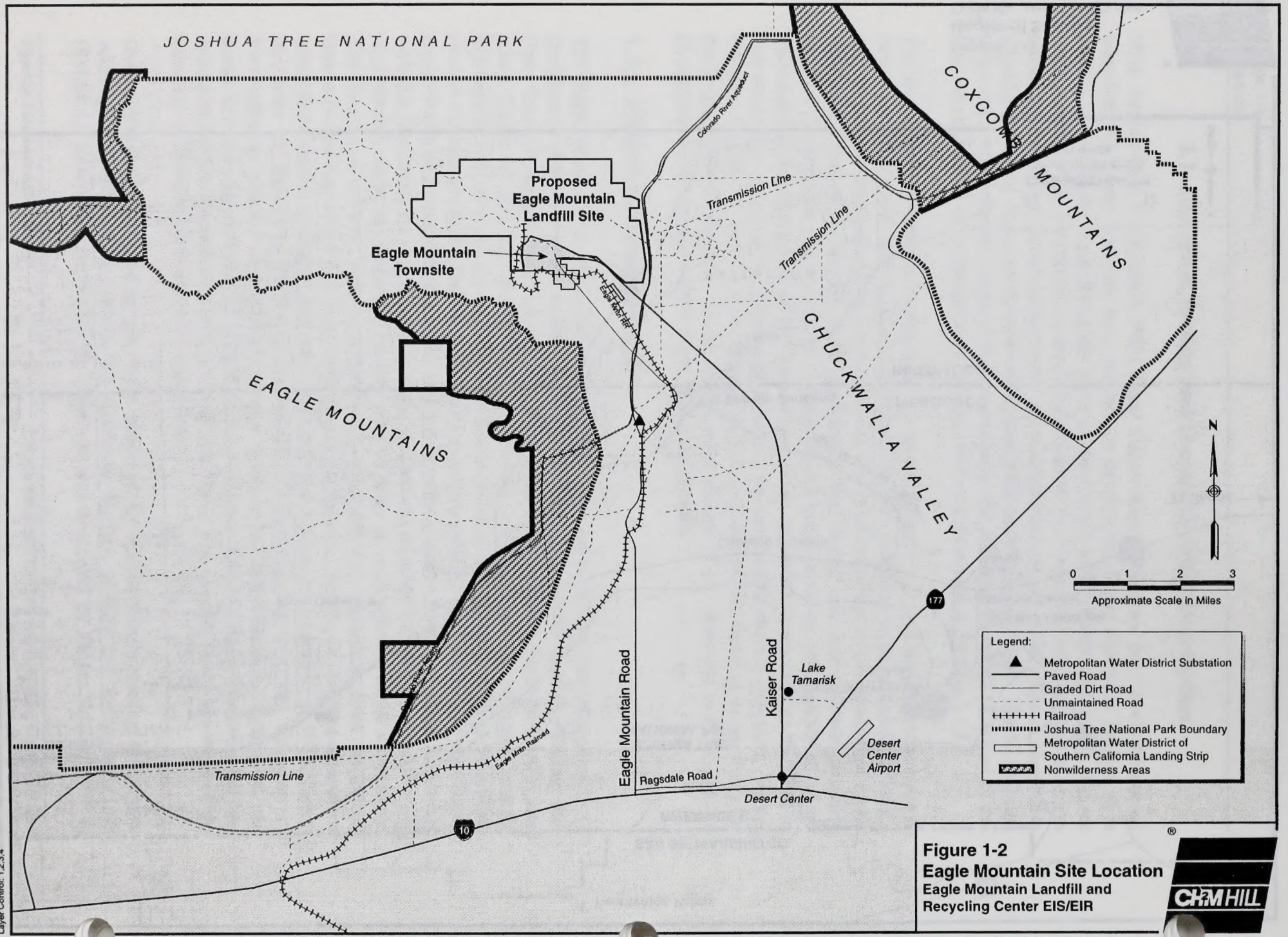


Figure 1-2
Eagle Mountain Site Location
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

1-4

Layer Control: 1,2,3,4

response to SMARA and approved by the County of Riverside. The reclamation plan, however, requires only limited reclamation activities (e.g., removing equipment and buildings and limiting public access to the former mine site). The continuing implementation of the existing plan would result in the site remaining a disturbed area. The existing reclamation plan is proposed to be amended as part of the proposed County land use approvals (see Section 1.2.5). This amendment applies only to the area addressed by the Specific Plan for the landfill.

1.1.2 Eagle Mountain Landfill

This section briefly describes the proposed Eagle Mountain Landfill. A detailed discussion of the landfill is in Section 2.1, Proposed Action. The site of the proposed Eagle Mountain Landfill is located in the eastern unincorporated area of the County, approximately 60 miles east of Indio, in the foothills of the Eagle Mountains at Kaiser's Eagle Mountain open-pit iron-ore mine, which discontinued full-time operation in 1983. The landfill site is bordered on the north, west, and southwest by the Eagle Mountains and on the east and southeast by the Chuckwalla Valley. The southern and eastern boundaries of Joshua Tree National Park (JTNP) are within approximately 1.5 miles of the Eagle Mountain Project site (see Figure 1-1).

The proposed Eagle Mountain Landfill is primarily a waste-by-rail facility designed to meet a significant portion of Southern California's long-term municipal solid waste disposal needs. The landfill will not accept sludges, hazardous wastes, or bulk waste with high-liquid content, which is waste defined as having a moisture content of more than 40 percent. The Eagle Mountain Landfill will accept only municipal solid waste from seven Southern California counties (i.e., Riverside, San Bernardino, Orange, Los Angeles, San Diego, Ventura, and Santa Barbara). To be accepted for disposal at the proposed landfill, the waste from these seven counties must be in compliance with the waste reduction and diversion mandates of the California Integrated Waste Management Act of 1989 (Assembly Bill 939 [AB 939]) (see Section 1.3.2.1) or any subsequent laws addressing recycling or waste diversion mandates. Compliance with AB 939 is determined by the appropriate jurisdiction of the California Waste Board.

For the first 25 years of landfill operations, the amount of waste accepted at the landfill site is expected to increase incrementally as other landfills in Southern California close and as the waste stream to be disposed of increases. For example, for the initial years of operation, approximately 4,500 tons per day (tpd) will be accepted for landfilling. This is anticipated to increase until the site is taking the maximum of 20,000 tpd in approximately year 25 of operation. By reclaiming Kaiser's open-pit iron-ore mine, the Eagle Mountain Landfill will have the capacity to receive at full operations up to 20,000 tons of waste per day from the seven-county wasteshed. The total capacity of the landfill will be approximately 708 million tons.

The proposed landfill site comprises approximately 4,654 acres. Of this acreage, approximately half of the landfill site (2,164 acres) will be used for disposal of waste (i.e., the landfill footprint); the remaining acreage (approximately 2,490 acres) will either be used for buffer areas and ancillary facilities and equipment required for operating the landfill or will remain as open space buffer areas. The Eagle Mountain Landfill will be developed in five phases (Section 2.1.6). Development operation of each phase is designed to progress from west to east (see Section 2.1.6 and 2.1.7). At any point in the operation of the landfill, the working face of the landfill will be limited to no more than 2 acres. Approximately 350 acres is expected to be landfilled during the first 15 years of operation.

Because the Eagle Mountain Landfill will be primarily a waste-by-rail facility, the majority of the waste will be transported by train to the landfill via the Southern Pacific rail system and an existing 52-mile, Kaiser-owned rail line that extends from Ferrum Junction to the Eagle Mountain Mine. Kaiser has a right-of-way for the existing private railroad that is proposed to be reissued by the BLM under the Federal Land Policy and Management Act of 1976 as amended (FLPMA) as part of the land exchange. (The private railroad is shown in Figure 1-1.) Most of the waste not transported by train will be transported by transfer trucks in enclosed waste-haul trailers; only a small percentage of waste will be accepted at the landfill site as commercially operated self-haul from local communities in the Chuckwalla Valley area. Waste transported to the Project site, whether by train or by transfer truck, which are required to be covered, will be required to be transported in enclosed containers, with the exception of local self-haul loads.

Rail access to the site is via the Southern Pacific rail system through the Coachella Valley and Kaiser's 52-mile Eagle Mountain Railroad. Trains destined for the Project site can also use other railroads in Southern California to link into the Southern Pacific rail system. The existing primary road access to the landfill site area is from County Road R-2 (Kaiser Road). Transfer trucks delivering waste to the landfill will use Eagle Mountain Road (as extended) and the last 2 miles of Kaiser Road east of the Townsite. (These features are shown in Section 2, Figures 2-4, 2-5, and 2-6.)

As discussed above, waste will be accepted at the Eagle Mountain Landfill only from jurisdictions in compliance with the waste diversion mandates of AB 939 (Section 1.3.2.1). In addition to residential curbside recycling programs, municipalities in Southern California use materials recovery facilities (MRFs) or transfer stations (TSs) to help achieve the requirements of AB 939. Waste will be screened to remove hazardous materials at MRFs or TSs or at the landfill local waste receiving facility; and recyclable materials will be recovered from the waste stream at MRFs and the landfill to assist local communities in complying with the waste diversion requirements of AB 939.

1.1.3 Eagle Mountain Townsite

In addition to the Eagle Mountain Landfill, the Eagle Mountain Project includes the renovation and the repopulation of the adjacent Kaiser-owned Townsite as a result of a need for housing for landfill workers and their families. The Townsite is discussed and illustrated

in detail in Section 2.1.3. The proposed Specific Plan for the Townsite has been incorporated as part of the project description (Section 2, Description of the Proposed Action and Alternatives). The general location of the Townsite in relation to the landfill is shown in Figure 1-2. The Townsite is an existing, but underutilized, former mining community that at one time supplied housing for Kaiser Steel employees and their families. The Townsite, which is located directly south of the Eagle Mountain Landfill site on approximately 429 acres, consists of an existing network of residential and commercial buildings and infrastructure. Located within the Townsite is a privately operated community correctional facility that operates under a conditional use permit from the County and under contract with the California Department of Corrections.

Primary vehicular access to the Townsite is by Kaiser Road, which enters the Townsite from the east. Kaiser Road connects to State Highway 177 and Interstate 10 at Desert Center approximately 11 miles south of the Townsite (see Figure 1-1). The Kaiser-owned Eagle Mountain Railroad currently traverses the Townsite's southern and western perimeter and terminates at the proposed Eagle Mountain Landfill Specific Plan west of the Townsite. The proposed Project will reroute some of the rail traffic around, rather than through the Townsite (see Section 2.1.2.3). The Metropolitan Water District of Southern California (MWD) owns a private, general aviation landing strip to the southeast of the Townsite (see Figure 1-2).

Kaiser Steel Corporation acquired the Eagle Mountain Mine in 1944. At the start of operations in 1948, Kaiser Steel's initial development in the Townsite occurred directly south of the mine site to provide housing for mine workers employed by the company. As the employment base at the mine increased, the Townsite was expanded to provide additional worker housing. The last phase of home construction took place in the late 1960s when 75 prefabricated homes were added to the housing stock. At the height of mining operations in the 1960s and 1970s, approximately 3,700 people lived in the Townsite. Land uses that existed in and near the Townsite during that period are summarized below.

- Residential: At the conclusion of home construction, the Townsite contained 914 units consisting of single-family homes, mobile home sites, apartments, and dormitory housing.

- Schools: Three public schools serviced the community, consisting of an elementary school, a junior high school, and a senior high school with a combined enrollment of just under 1,000.

- Churches: The Townsite community contained three churches that provided varied opportunities for religious involvement and service activities.

- Commercial: A variety of commercial facilities and services supported the physical, commercial, and recreational needs of the local population.

- Utilities/Services: A full range of utilities (e.g., water, sewer, electricity, telephone) and services (sheriff's office, fire station) serviced the Townsite.

1.1.4 Alternatives Considered in Detail

In addition to the Proposed Action, the Project alternatives presented below are considered in detail in this EIS/EIR. This Draft EIS/EIR does not identify a BLM-preferred alternative or alternatives as was done is the previous EIS/EIR. At the present time, the BLM does not have a preferred alternative and is working closely with the NPS at JTNP to address environmental concerns. After the public comments on this Draft EIS/EIR have been assessed, an agency-preferred alternative or alternatives will be identified in the Final EIS/EIR. This change from the previous EIS/EIR to not identify an agency-preferred alternative or alternatives is in conformance with Council of Environmental Quality and internal BLM procedures.

1.1.4.1 No Action Alternative

The No Action Alternative would leave the Eagle Mountain iron-ore mine site in its present condition, and the landfill would not be developed. The administrative activities associated with the former mining operations would be maintained, and the existing mining reclamation plan would continue its process of implementation. Southern California communities would continue to rely on existing, expanded, or other new landfills. The No Action Alternative would leave the Townsite in its present condition, and no further renovation beyond existing approved uses would occur. The rights-of-way would not be issued, and the land exchange between the BLM and Kaiser would not occur. (See Section 2.2.)

1.1.4.2 Reduced Volume of Onsite Disposal Alternative

This alternative would allow for the disposal of up to 16,000 tpd of waste including up to 14,000 tpd by rail and up to 2,000 tpd by truck. The landfill operating conditions would be similar to the proposed Project. The rights-of-way would be issued, and the land exchange between the BLM and Kaiser would occur. (See Section 2.3.) The Townsite would be repopulated, as discussed under the Proposed Action.

1.1.4.3 Alternate Road Access Alternative

Under this alternative, transfer trucks would use the existing Kaiser Road to bring waste to the site instead of the existing Eagle Mountain Road and its proposed extension. Because Eagle Mountain Road would not be used, no new construction of the proposed Eagle Mountain Road extension would occur. All other landfill activities of the proposed Project would remain the same. The proposed renovation of the Townsite would proceed as in the Proposed Action. The rights-of-way would be issued, and the land exchange between the BLM and Kaiser would occur. (See Section 2.4.)

1.1.4.4 Rail Access Only Alternative

This alternative would eliminate the use of all refuse-hauling trucks from outside the Chuckwalla Valley and Blythe area to the proposed site resulting in a reduction in the capacity of the landfill to 18,000 tpd. All other landfill activities of the proposed Project would remain the same. The proposed renovation of the Townsite would proceed as in the Proposed Action. The railroad right-of-way would be issued, and the land exchange between the BLM and Kaiser would occur. (See Section 2.5.) Waste from the Chuckwalla Valley and Blythe area would continue to be disposed of at existing landfills.

1.1.4.5 Landfill on Kaiser Land Only Alternative

This alternative would allow for operation of the proposed landfill without implementing the proposed land exchange between the BLM and Kaiser. There would, however, be a modified land exchange involving a reversionary interest in some of the lands needed for the landfill and the Townsite, and the proposed rights-of-way would still be implemented. The landfill would comprise only Kaiser-owned lands in and around the East Pit (Phase 5 of landfill development under the Proposed Action). The landfill footprint would cover an area of approximately 289 acres and would accept a maximum of 10,000 tpd of municipal solid waste. Landfill design, development, operation, environmental monitoring, and closure and postclosure would be the same as described for the Proposed Action.

The proposed renovation of the Townsite would proceed as in the Proposed Action. The rights-of-way would be issued, and there would be a modified land exchange involving the reversionary interest or a purchase of the reversionary interest in some of the lands needed for the landfill and the Townsite.

1.1.4.6 Landfill Development/No Townsite Development Alternative

Under this alternative, the landfill portion of the proposed Project would proceed as proposed; but the Townsite Specific Plan would not be approved, and renovation of existing structures of the Townsite would not occur within the existing Townsite. No improvements to existing conditions would be made within the Townsite, but federal land use approvals would proceed (i.e., the rights-of-way would be issued and the land exchange between the BLM and Kaiser would occur). The existing Townsite would remain essentially unchanged from the existing condition.

1.2 Previous Environmental Impact Statement and Environmental Impact Report

The BLM and the County, acting as lead agencies under NEPA and CEQA, respectively, previously prepared a joint EIS/EIR (BLM and Riverside County, June 1992) for the landfill project. The County issued its approvals and certified the EIR on November 3, 1992. The BLM issued its Record of Decision (ROD) approving the land exchange and the associated

rights-of-way on October 20, 1993. Both of these approvals and the adequacy of the environmental documentation were subsequently challenged in legal proceedings. The County's certification of the EIR and associated project approvals were challenged in state Superior Court, and the BLM's ROD approving the land exchange and rights-of-way was appealed to the IBLA in the U.S. Department of Interior (see Section 1.2.2). Appendix A contains documents pertinent to the Court and Appendix B-3 contains the IBLA stay.

1.2.1 San Diego Superior Court Cases and Rulings on CEQA (Environmental Impact Report) Issues

In December 1992, three actions were filed in state court challenging the County's certification of the EIR and associated project approvals. On July 26, 1994, the San Diego County Superior Court issued Statements of Decision in the three cases, finding that the EIR was deficient in certain specific areas. On September 1, 1994, and October 18, 1994, the Court entered judgment and issued Writs of Mandate in the three actions, ordering the County to prepare a new EIR in accordance with the Court's judgment.

The Court ordered the County to take the following specific actions to bring its certification and project approvals into compliance with CEQA:

- Fully analyze in a manner supported by substantial evidence the cumulative impacts of the project and Eagle Mountain Energy Company's (now Eagle Crest Energy Company [ECEC]) proposed hydroelectric project

- Fully disclose and provide adequate information regarding the County's opposition to the hydroelectric project in other forums

- Fully analyze the feasibility of the mitigation measures for the project in light of the cumulative impacts analysis and the proposed land exchange between Kaiser and the BLM; and analyze in a manner supported by substantial evidence the possibility that the proposed land exchange may not occur, including the effect of the stay of the land exchange by IBLA

- Provide a project description that includes the neighboring Townsite and analyze the true environmental impacts of the proposed project in conjunction with environmental impacts resulting from expansion of the Townsite caused by the Project

- Fully analyze in a manner supported by substantial evidence any impacts of the proposed landfill project on the desert tortoise, including the effectiveness of any proposed mitigation measures

- Fully analyze in a manner supported by substantial evidence the potential impact of seismic activity on the landfill, including establishing by substantial evidence the supportability of any conclusions that liners for the Project will withstand seismic

activity and/or that the landfill's containment system has the ability to capture and control leachate, and providing an explanation supported by substantial evidence regarding the existence or lack thereof of any Holocene faults in the vicinity of the landfill

- Fully analyze in a manner supported by substantial evidence the impact of the proposed landfill project on the neighboring Joshua Tree National Monument (now Joshua Tree National Park) including, but not limited to, any negative impacts upon the natural peace and solitude, the clean air, the pristine desert (i.e., the "wilderness experience") offered by Joshua Tree National Monument (now Joshua Tree National Park)

- Fully analyze in a manner supported by substantial evidence the impact of the Level I Contaminant Survey conducted by the BLM in connection with the proposed land exchange relating to the Project

Table 1-1 provides a summary of the sections of this EIS/EIR in which these issues are addressed. The complete Statement of Decision of the Court is in Appendix A.

The Court also ruled that MRFs and TSs to be located in the Southern California area are not "part of the Project" and, thus, detailed site-specific review of each of these current and proposed facilities is not required. Although the Court's ruling does not require that the MRFs/TSs be studied as part of the Project, this EIS/EIR discusses these facilities to provide general information concerning their location, operation, and environmental review processes. On February 28, 1996, the State Court of Appeal, Fourth Appellate District, upheld the ruling of the trial court that MRFs and TSs are not part of the landfill portion of the Project (see Appendix A). The Court held that detailed environmental review should be undertaken when such facilities are located to provide meaningful site-specific review. The Court also upheld the validity of a Development Agreement entered into among Kaiser, MRC, and the BLM.

The County's approval of the previous project included, and the Project description for this EIS/EIR includes, a requirement that all solid waste proposed to be sent to the landfill from outside the Chuckwalla Valley must first be processed at a solid waste MRF or TS. The purpose of this requirement is to ensure that municipalities and jurisdictions that want to send waste to the proposed landfill are in compliance with the California Integrated Waste Management Act of 1989 provisions (and any subsequent amendments) mandating recycling and source reduction to reduce the amount of solid waste going to municipal landfills. (See Public Resources Code §§40000 et seq., in particular §41780.) The Act currently requires that all counties achieve a 25 percent reduction of waste materials formerly going into municipal landfills by January 1, 1995, and a 50 percent reduction by January 1, 2000. Each city and county in the state must prepare an Integrated Waste Management Plan for the management of solid waste generated or disposed of in its respective jurisdictions, and must provide detailed discussion of source reduction and recycling programs, including a discussion of the use of transfer stations and MRFs, as appropriate.

Table 1-1
Court Issues for Previous Environmental Impact Report[1]
Location in EIS/EIR

Issues and Section Locators							
ECEC Hydroelectric Project	**County's Opposition to Hydroelectric Project**	**Feasibility of Mitigation Measures/Possibility That Land Exchange Might Not Occur**	**Townsite**	**Desert Tortoise**	**Seismicity**	**JTNP**	**BLM Level I Contaminant Survey**
1.2.1, 1.8, 4.16.2.1, 5.1, 5.2.3, 5.2.4, 5.4.1.1 5.5.2.3, 5.5.3.1, 5.5.3.7, 5.5.3.8	1.2.1, 4.16.2.1, 5.4.1, 5.4.1.1	1.0, 1.1.4.1, 2.1.1, 2.2, 2.6, 4.3.4.5, 4.5.4.1, 4.6.2.1, 4.13.2.6, 4.7.3.2, 4.7.3.5, 4.7.5, 4.7.9, 3.10.1.2, 4.10.2.2, 4.10.3.1, 4.10.4.1, 4.11.8.1, 5.4.1.1, 6.2.2	1.1.3, 2.1.3.2, 2.1.3.3, 2.8.6, 2.8.7, 3.2.3, 3.5.1.3, 3.5.3.2, 3.6.3.2, 3.8.2.1, 3.8.2.2, 3.10.1.2, 3.10.4.2, 3.11.5.2, 4.1.2.1, 4.1.2.7, 4.1.3.7, 4.2.2.2, 4.2.2.8, 4.2.3.7, 4.2.4.7, 4.2.5.7, 4.2.6.7, 4.4.2.7 4.14.2.7, 4.15.2.7, 4.16.8, 4.16.8, 4.7.2, 4.5.2.1, 4.5.2.7, 4.5.3.7, 4.5.4.7, 4.6.2.1, 4.6.8, 4.13.2.7, 4.13.3.1, 4.13.3.7, 4.13.4.7, 4.13.5.7, 4.13.6.7, 4.13.7.7, 4.7.10, 4.8.2.7, 4.8.3.7, 4.9.2.7, 4.9.3.12, 4.9.4.7, 4.10.2.2, 4.10.2.8, 4.10.3.7, 4.10.4.7, 4.10.5.7, 4.11.9, 4.12.2.1, 4.12.2.7, 4.12.3.7, 4.124.7, 4.12.5.7, 5.5.3, 5.5.3.8, 6.2.3	1.2.1, 1.2.4, 1.4.2.3, 2.1.1.2, 3.7, 3.7.3.1, 4.7, 4.7.2, 4.7.3.2, 4.7.3.3, 3.11.5.1, 3.11.7.3, 5.5.3.3, 6.2.2	3.9, 3.9.2, 3.9.2.1, 3.9.2.2, 3.9.2.4, 4.9, 4.9.3, 4.9.3.1, 4.9.3.2, 4.9.3.3, 4.9.3.6	4.2.3.1, 4.2.4.1, 4.2.5.1, 4.4.2.1, 4.13.1.4, 4.10.1.4, 4.10.2.2, 4.10.5.1, 4.11.1, 4.11.2, 3.7.2, 3.4.3.3, 3.13.4.3, 3.10.1.2, 3.10.4.1, 3.11.6.3, 3.11.7.3, 5.4.1.2, 5.5.3.1, 5.5.3.8	3.2.2.1, 4.2.2.1

ECEC: Eagle Crest Energy Company
EIS: Environmental Impact Statement
EIR: Environmental Impact Report
JTNP: Joshua Tree National Park
BLM: Bureau of Land Management
[1]BLM, County of Riverside, 1992.

The use and operation of several existing and currently proposed MRFs/TSs that could potentially serve the proposed Eagle Mountain Landfill are discussed in this EIR to provide information on the nature of these facilities and how they are operated. The discussion includes the location or proposed location of several existing and planned facilities, a description of the facility's operations, and a description of the environmental review for each facility undertaken or in preparation pursuant to CEQA and/or NEPA. The environmental documentation for each of these facilities assessed a broad range of environmental effects, including traffic, noise, air, and water quality. These facilities can generally be expected to generate one or more significant impacts. Table 1-2 summarizes this information for several facility examples within the expected wasteshed.

The West Valley MRF in San Bernardino County is being developed by Kaiser/Burrtec, which is a partnership consisting of a subsidiary of Kaiser Ventures Inc. This facility is fully permitted. Negotiations are ongoing between the developers and San Bernardino County regarding the construction and operation of this facility. The facility could ship waste to a number of local landfills by truck or to regional landfills, including Eagle Mountain, by train or truck.

For those MRFs/TSs not yet permitted and operating, the detailed, site-specific environmental review of these future facilities will occur in the jurisdiction in which they are proposed to be located. Many of these MRFs/TSs have identified more than one landfill to which they could transfer waste. Existing or proposed MRFs/TSs are not a consequence of the Project because municipalities generate solid waste on a daily basis, and will continue to need facilities to manage and dispose of the waste safely, regardless of the status of the proposed Project. MRFs/TSs and municipal recycling programs, along with source reduction, will be necessary to handle and dispose of this solid waste. This EIR includes a general discussion of potential effects of the anticipated future use of solid waste MRFs/TSs to achieve AB 939 compliance.

1.2.2 Bureau of Land Management's Record of Decision for EIS

Pursuant to the FLPMA, the BLM issued its Record of Decision approving the previous EIS, the land exchange with Kaiser, and the associated right-of-way grants for the Eagle Mountain Road and the Eagle Mountain Railroad on October 20, 1993. Sixteen appeals were subsequently filed with the Department of Interior's IBLA challenging the BLM's decision. Pending its decision on the merits of the appeal, the IBLA issued an order staying the land exchange. On March 13, 1995, after the County had withdrawn its previous project approvals and it was determined that a new EIR would be prepared in accordance with the Court decision, the BLM requested that the IBLA remand the ROD to the BLM. The IBLA granted the BLM's request for remand on April 27, 1995. The remand facilitated the BLM joining the County in its additional environmental review. The BLM subsequently published a Notice of Exchange Proposal (NOEP) on May 12, 1995, pursuant to FLPMA for the proposed land exchange. The BLM is the lead agency for preparing the new EIS under NEPA.

Table 1-2
Examples of Existing and Planned Materials Recovery Facilities and Transfer Stations Within the Area[1]

Facility	County Location	Status	Environmental Review
Puente Hills MRF	Los Angeles	Approved; Not Yet Operating	EIR Certified
West Valley (Kaiser-Burrtec) MRF	San Bernardino	Approved; Not Yet Constructed	EIR Certified
Gold Coast MRF	Ventura	Operating	EIR Certified
Perris MRF/TS	Riverside	Approved; Under Construction	Mitigated Negative Declaration
Moreno Valley MRF/TS	Riverside	Approved; Under Construction	Mitigated Negative Declaration
Agua Mansa MRF/TS (North County TS and MRF)	Riverside	Not Yet Approved by State	EIR Certified
Coachella Valley Association of Governments[2]	Riverside	Proposed	Under Review
Palomar TS	San Diego	Operating	Mitigated Negative Declaration
Escondido MRF	San Diego	Approved; Under Construction	Mitigated Negative Declaration
Santa Barbara County TS	Santa Barbara	Operating	EIR Certified
Consolidation Volume Transporters	Orange	Operating	Mitigated Negative Declaration
Industry	Los Angeles	Proposed	Supplemental EIR Being Prepared
Stanton TS	Orange	Operating	Mitigated Negative Declaration

[1]This table presents a partial listing of MRFs/TSs within the seven-county wasteshed area most likely to send waste to the Eagle Mountain Landfill (i.e., Riverside, Orange, Los Angeles, San Diego, Santa Barbara, San Bernardino, and Ventura Counties).
[2]Coachella Valley Association of Governments (CVAG) has solicited a proposal for constructing and operating a MRF/TS.
MRF = Material Recovery Facility
TS = Transfer Station

1.2.3 Major Differences between Previous and Currently Proposed Project

In addition to complying with the Court's Writ of Mandate to address deficiencies in the previously prepared EIR, the description of the Project has been updated; and the applicants (MRC and Kaiser) have proposed certain changes to the landfill portion of the Project. The major differences between the previous and currently proposed landfill design are presented in Table 1-3.

These differences include: (1) substantial modification of the landfill liner design (see Figures 1-3 and 2-9) and final cap (see Figure 2-15) based on regulatory permitting requirements following certification of the previous EIS/EIR; (2) change in the geographic area from which waste will be accepted from four counties (i.e., Riverside, San Bernardino, Los Angeles, and Orange) to seven (i.e., the original four counties plus Ventura, Santa Barbara, and San Diego Counties) (there is no proposed increase, however, in the proposed total or daily tonnage to be accepted at the Eagle Mountain Landfill); (3) development of separate land use applications for the Townsite and the landfill to comply with the Court's ruling; (4) incorporation of landfill gas and groundwater monitoring systems into the design; and (5) operation of the landfill primarily during daylight hours rather than only during daylight hours. The features are discussed in detail in Section 2.

1.2.4 Federal Role (Bureau of Land Management, Environmental Impact Statement)

The federal action, which involves a land exchange and railroad and road right-of-way grants, is discussed in Section 2, Description of the Proposed Action and Alternatives. The BLM has identified approximately 3,481 acres of land suitable to be exchanged with Kaiser's 2,846 acre area. In the land exchange, the BLM would transfer this public land (or "selected lands") to Kaiser together with a reversionary interest on 465 acres that the United States holds in and around the Kaiser-owned Townsite. Much of this public land is disturbed from mining operations and is subject to unpatented mining- and mill-site claims held by Kaiser. The BLM would acquire from Kaiser approximately 2,846 acres of land (or "offered lands") that includes areas containing important habitat for the desert tortoise (a federally listed threatened species) and habitat supporting the desert pupfish (a federally listed endangered species). Kaiser will lease those exchange lands acquired from the BLM and located within the Landfill Specific Plan, together with other lands currently owned by Kaiser and needed for the Eagle Mountain Landfill, to MRC for use in developing and operating the landfill. The proposed exchange lands are described in detail in Section 2.1.1 and shown in Figures 2-1, 2-2, and 2-3. The legal description of these lands is in Appendix A.

Kaiser currently has a right-of-way for its private Eagle Mountain Railroad to the proposed Project site and a right-of-way on Eagle Mountain Road that was granted by the BLM pursuant to Private Law 790 (PL 790), on certain federal lands along the rail and roadways

Table 1-3
Eagle Mountain Landfill and Recycling Center
Summary of Major Differences Between Previously Proposed Project and Currently Proposed Project

Previous Landfill Project	New Application	Discussion
Waste flow into landfill site would have initially come into PA 2 until volume exceeded 4,750 tons per day; new rail yard and truck marshaling yard will then be built in PA 3 to accept waste.	Waste flow into landfill site will come into PA 2 until volume exceeds 10,000 tons per day; a new rail yard and truck marshaling yard will then be built in PA 3.	By extending the years in which PA 2 can be used, new construction in PA 3 can be deferred until later in the Project.
The EIS/EIR analyzed a landfill cap consisting of a 24-inch foundation layer with an 18-inch layer of compacted clay overlain by a 12-inch-thick vegetative (erosion) layer.	The cap will include a geosynthetic liner in addition to the compacted clay, and a 24-inch erosion layer composed of cobbles and boulders.	The new cap is better suited to the arid climate because: • The final cap will more closely blend in with the existing rock topography. • The potential for erosion will be less. • It is more durable and maintenance free. • It will not require artificial irrigation to support vegetation.
The EIS/EIR analyzed a landfill liner consisting of a composite liner of compacted clay and a geosynthetic liner.	The new Project description includes a different liner design. This liner is also a composite liner but uses a GCL on the side slopes instead of compacted clay.	GCLs are not affected by placement in a hot, dry climate. GCLs are more permeable than compacted clay. No construction water is needed for GCLs. Less equipment and shorter construction time means less noise and air emissions.
Previous project did not include an additional liner on the bottom of the landfill.	The new Project will include an additional composite liner system on the bottom (25 percent of the total area) of the landfill.	Required by RWQCB in issuing Waste Discharge Requirements in May 1994. Provides the earliest possible detection of a potential liquid release.
The previous project did not include vadose zone gas monitoring beneath the entire landfill.	The new proposed Project incorporates an extensive gas monitoring system to detect small quantities of landfill gas, which might migrate through the liner system.	This was required by the RWQCB to provide an additional level of monitoring. Provides the earliest possible detection of a potential gas release.
The previous project allowed for waste coming from four counties (Orange, Riverside, San Bernardino, and Los Angeles).	This Project considers waste from seven counties (Riverside, Orange, Los Angeles, Ventura, Santa Barbara, San Diego, San Bernardino) but with no increase in volume.	The Southern California waste market is not constrained by county lines. Waste is transported freely in Southern California from one county to another.
The total acreage of the previous project was 4,684.	The total acreage of this Project will be 4,654.	Prior to the issuance of the ROD, the BLM removed a 30-acre section in the southwest corner of the site from the land exchange because the land was previously classified as a wilderness study area by the BLM.
During the previous process, there were no land use approvals processed for the Townsite.	The new EIS/EIR process will evaluate the potential impacts from both the landfill and the Townsite projects. Kaiser submitted a separate application for a specific plan for the Townsite that will be processed concurrently with the applications for the landfill.	This would ensure compliance with CEQA.
Previous Project approval included facility operations 7 days/week, 24 hours/day with actual landfilling to occur during daylight hours, 6 days/week.	The new Project description proposes facility operations 7 days/week, 24 hours/day with landfilling primarily during daylight hours, 6 days/week.	This would allow landfilling operations to continue for a brief period into the evening, to maximize operational efficiency.
Previous Project included a waste inspection facility in PAs 2 and 3.	The new Project description proposes the waste inspection facility in PA 1.	This would facilitate operational efficiency.

PA: Planning Area (PAs are discussed in detail in Section 2.1 and shown in Figure 2-8)
EIS/EIR: Environmental Impact Statement/Environmental Impact Report
RWQCB: Regional Water Quality Control Board
CEQA: California Environmental Quality Act
Note: A composite liner will underlie the entire landfill footprint. It will consist of a 80-mil geomembrane and a 2-foot layer of low permeability compacted soil. On the side slopes of the landfill, the composite liner will comprise a geomembrane layer underlain by a geosynthetic clay liner (GCL).



Figure 1-3
Liner System for Proposed Landfill
Eagle Mountain Landfill and Recycling Center EIS/EIR

not already owned by Kaiser or where Kaiser has easements on private lands or permits from other federal agencies. For the proposed Project, there are two rights-of-way proposed to be granted by the BLM to Kaiser. The first right-of-way is for approximately 28.6 miles that traverse federal lands for the existing 52 miles of Eagle Mountain Railroad. It would be issued under the authority of FLPMA and would replace the existing legislatively approved (PL 790) right-of-way. This proposed right-of-way also includes a small portion of land for the rail spur (see Section 2.1.2.4 and Figure 2-6) proposed to be constructed from the existing Eagle Mountain Railroad to one of the Project's rail yards and approximately 3 miles for the extension of the existing Eagle Mountain Road northeast of the MWD Eagle Mountain Pumping Station (see Section 2.1.2.2 and Figure 2-5). The railroad, railroad spur, and road extension extend onto public lands proposed to be exchanged and would not be covered by a right-of-way on these lands.

The second proposed right-of-way, also to be issued under FLPMA, is approximately 6.75 miles long, and is proposed to be issued jointly to Kaiser and MWD for their joint use of the existing Eagle Mountain Road from Interstate 10 to the MWD Pumping Station (see Section 2.1.2.1, and Figure 2-4). Eagle Mountain Road is proposed to be vacated by the County as a county-maintained road. Both rights-of-way vary in width, with an average width of 200 feet for the railroad and an average width of 110 feet for the roadways.

In evaluating these federal actions, the BLM is required to ensure that the land exchange and the issuance of the rights-of-way are in the public interest. For the land exchange, the BLM must ensure that the value of the exchange lands is equal or equalized. The BLM's review also must maintain conformance with the California Desert Conservation Area (CDCA) Plan (including the requirement that federal lands be conveyed out of federal ownership prior to the construction of any new landfills on such lands). It has been determined that this proposed action does conform with the CDCA Plan.

1.2.5 County Role (Environmental Impact Report)

In general, the County is responsible for reviewing land use planning requests and applications. In this EIR, the County is responsible for reviewing land use permit applications for the proposed landfill and the Townsite. For the landfill, MRC has applied to the County for the following approvals: Specific Plan No. 305, General Plan Amendment No. 402, Change of Zone No. 6249, Development Agreement No. 64, and Revised Permit No. 158 to Reclamation Plan No. 107. On the basis of the expected repopulation of the Townsite (which is owned by Kaiser and is not leased to MRC) and in accordance with the Court's decision, Kaiser has applied for the following land use approvals from the County for the Townsite: Specific Plan No. 306, General Plan Amendment No. 405, Change of Zone No. 6253, and Tentative Tract Map No. 28217.

The following text presents a general description of the key land use documents reviewed by the County for this proposed action. A local general plan is a city or county's basic planning document for future development. It represents the community's view of its future; a "constitution" made up of the goals and policies upon which the city council, board of supervisors, or planning commission base their land use decisions. The general plan addresses all aspects of development including housing, traffic, open space, safety, land uses, and public facilities. A specific plan implements the general plan by assessing land use distribution, open space availability, infrastructure, and infrastructure financing for a specific portion of the community.

Local zoning codes regulate the use and development of property. The zoning ordinance divides a city or county into land use districts or "zones," illustrated on zoning maps and specifies the allowable uses within each zone. It establishes development standards, such as minimum lot size, maximum structure height, building setbacks, and yard size. A development agreement is a negotiated contract between a developer and a city or county, establishing the conditions under which a particular development can occur. The local government "freezes" the regulations applicable to the site for an agreed-upon period of time. A tentative map is a map or drawing illustrating a subdivision proposal. A city or county will conditionally approve or deny the proposed subdivision based on design depicted on the tentative map. This section presents the proposed Project's purpose and need and its objectives. The Project purpose and need is described in accordance with NEPA and the objectives are described in accordance with CEQA Guidelines.

1.3 Project Purpose, Need, and Objectives

This section presents the purpose and need and the objectives for the Project. The purpose and need are described in accordance with NEPA, and the objectives are described in accordance with CEQA.

Under NEPA, an EIS must specify "the underlying purpose and need to which the agency is responding" with the action proposed in the EIS (40 CFR § 1502.13). The BLM's NEPA guidance states that "for externally initiated proposals, the purpose and need generally reflect what the applicant intends to accomplish by the proposed action..." In accordance with these requirements, the primary purpose of the proposed Project is to develop a new Class III nonhazardous municipal solid waste landfill. The need for the Project is discussed below in Section 1.3.1. Together, the purpose and need for the Project establish the basic parameters for identifying the range of alternatives to be considered under NEPA.

Under CEQA, an EIR must include a "statement of objectives sought by the proposed Project." (14 CCR § 15124(b)). These objectives are used in establishing the range of alternatives to be considered in the EIS/EIR for purposes of CEQA (14 CCR § 15126(d)). The objectives of the Project, for purposes of compliance with CEQA, are defined in their totality as the objectives of the County and Kaiser/MRC. These objectives are defined in Section 1.3.2, and reflect the need for the Project as defined in Section 1.3.1.

1.3.1 Project Purpose and Need

The primary purpose of the Project is to develop a new Class III nonhazardous municipal solid waste landfill to meet the projected long-term demand for environmentally sound landfill capacity in Southern California; provide a long-term income source from the development of a nonhazardous municipal solid waste landfill; find an economically viable use for the existing mining by-products at the Kaiser Eagle Mountain Mine site, including use of existing aggregate and overburden; and provide long-term land use and development goals and guidance for the Townsite.

Several recent studies documenting the need for additional landfill capacity in Southern California indicate that additional capacity is needed to meet the long-term demands (i.e., 1995 to 2050) and possible short-term needs (i.e., 1995 to 2000) of the Southern California region (California Integrated Waste Management Board [CIWMB], 1992; CIWMB, 1994, Draft Countywide Siting Elements—for the seven counties viewed as potential sources of waste for the proposed landfill—1995 and 1996). Additional capacity is also required for counties and municipalities in Southern California to satisfy the legal requirements of AB 939 to demonstrate adequate waste disposal capacity. The solid waste capacity in southern California changes often due to a number of factors, including: (1) the closure of small, inefficient landfills as new regulations take effect; (2) the development of larger regional sites; (3) the uncertainty of permitting efforts of new and expanded landfills; (4) litigation over land use issues of landfills and (5) the privatization of publicly owned landfills. These factors necessitate that cities and counties undertake long-term planning to ensure that adequate capacity is available.

The discussion below of waste capacity in the Southern California region is based on projected short-, medium-, and long-term needs. Future needs are based on several continuing and changing trends: (1) increase in population (California's population is expected to more than double from its current 30 million to more than 60 million by the year 2040 [California Department of Finance, 1993]); (2) expanded waste diversion and recycling, which is reducing the amount of material being disposed of in landfills; and (3) landfill closures and development proposals that will affect future disposal capacity.

1.3.1.1 Waste Diversion

In September 1989, the California Integrated Waste Management Act (AB 939) was signed into law. Among other provisions, AB 939 requires each city and unincorporated county area to prepare a Source Reduction and Recycling Element (SRRE) describing how it will meet solid waste diversion goals of 25 percent by the year 1995 and 50 percent by the year 2000. All California cities and unincorporated county areas have prepared and submitted their SRREs to the CIWMB. AB 939 also requires that these jurisdictions have a minimum of 15 years of waste disposal capacity. Preliminary assessments made by the CIWMB indicate that most jurisdictions will meet or come close to meeting the 1995 diversion goals of 25 percent. Since 1990, per capita waste generation has declined from 7.9 pounds per day to

5.9 pounds per day *(Toward Ensuring Adequate Landfill Capacity, Integrated Waste Management Planning Study,* May 1995). Much of this decrease is attributable to increased source reduction, recycling and composting activities, and a prolonged statewide economic recession.

1.3.1.2 Disposal Capacity Requirements

In 1992, the CIWMB reported that there was a critical landfill capacity shortfall, with 70 percent of California's counties expected to have fewer than 15 years of remaining disposal capacity. Ten of the counties that comprise approximately 40 percent of the state's population had fewer than 5 years of landfill disposal capacity.

The projected disposal shortages in capacity have been slightly alleviated in the short term due to repermitting and expansion of some existing landfills and an overall 20 percent statewide reduction in disposal from 42.5 million tons in 1990 to 34 million tons in 1993. As discussed below, there is still, however, a need for additional disposal capacity, especially in Southern California. Even if all cities and the unincorporated county areas in Southern California comply with AB 939 requirements and divert 50 percent of their waste from landfills by the year 2000, six counties in Southern California (Riverside, Los Angeles, San Bernardino, Santa Barbara, San Diego, and Ventura) will still have fewer than 15 years of fully permitted disposal capacity (from existing facilities and permitted expansions). Only the Counties of Orange and Imperial have at least 15 years of existing permitted disposal capacity, as required by AB 939 (see Section 1.3.2.1).

The disposal capacity requirements for the Counties of Riverside, San Bernardino, Los Angeles, Orange, Santa Barbara, San Diego, and Ventura are presented in the following sections for three periods of time: short term (1995 to 2000), medium term (1995 to 2020) and long term (1995 to 2050). These requirements are based on information presented in the draft countywide siting elements for each of these counties to the year 2010, and these data are extrapolated for subsequent years (see Section 9, References). The documents on which this discussion of disposal capacity are based are:

- Los Angeles County, Draft Countywide Siting Element (January 1996)
- Orange County, Draft Countywide Siting Element (February 1995)
- Riverside County, Draft Countywide Siting Element (January 1996)
- San Bernardino County Draft Countywide Siting Element (November 1995)
- Santa Barbara County, Draft Countywide Siting Element (April 1996)
- San Diego County, Draft Countywide Siting Element (August 1995)
- Ventura County, Draft Countywide Siting Element (August 1995)

These counties, which are the planned service area of the Eagle Mountain Landfill, are collectively referred to in this EIS/EIR as the "Region" or "seven-county Region." Various options being considered by decisionmakers in the respective counties for developing the required additional disposal capacity for each of the three time periods are discussed below. These options are detailed in the various counties' draft countywide siting elements. In this

discussion, "local landfill disposal facilities" refer to facilities that would be primarily, if not totally, served by trucks. "Remote facilities" refer to landfill disposal facilities that would be primarily served by rail because of longer haul distances.

Short-term Disposal Capacity Requirements. In the short-term period (1995 to 2000), most areas in the seven-county Region generally have sufficient available disposal capacity to meet their needs. Several counties and/or particular wastesheds (i.e., the collective areas where waste is generated) within a specific county could, however, have inadequate local disposal capacity to meet their needs, as discussed below.

Riverside County. Adequate permitted landfill capacity exists in the County of Riverside to meet its short-term needs. In the eastern portion of the County of Riverside, however, a shortfall in disposal capacity could occur as early as the year 2002, particularly in the Coachella Valley area. The area is serviced by two landfills: (1) Coachella Landfill, which is anticipated to close in 1997 and (2) the Edom Hill Landfill, which is anticipated to close in the year 2002 if the waste stream from the soon-to-close Coachella and Mecca II landfills are diverted to Edom Hill Landfill and it does not receive a permit from the CIWMB and Regional Water Quality Control Board (RWQCB) for a 40-foot vertical expansion that will provide 4 years of additional capacity. The Coachella Valley Association of Governments (CVAG) has issued two requests for proposal (RFP) and received proposals. One is to build a transfer station and the other is to obtain necessary landfill capacity for up to 1,500 tons of waste per day. (CVAG comprises portions of the unincorporated County of Riverside and the municipalities of Palm Springs, Cathedral City, Rancho Mirage, Palm Desert, Indian Wells, La Quinta, Indio, Coachella, and Desert Hot Springs.) One of the closest potential sites for disposal of Coachella Valley waste is the proposed Eagle Mountain Landfill. The County is also examining the possibility of shipping waste from the Coachella Valley to the Badlands Landfill located in the western portion of the County, although this action could require a permit revision. A summary of the disposal bids submitted to CVAG is included in Appendix B.

San Bernardino County. San Bernardino County has overall adequate total landfill capacity to the year 2000. As discussed in the section on medium-term capacity, the valley area of the county, which has 80 percent of the population, could run out of capacity as early as the year 2001.

Los Angeles County. By the year 2000, Antelope Valley, Azusa, BKK, Bradley West, Chiquita, Lancaster, Lopez, and Spadra landfills will have reached their permitted capacity or their permit to operate will have expired. These potential closures represent a loss of more than 40,000 tons per day of permitted disposal capacity. As noted in the Preliminary Draft of the Los Angeles County Countywide Siting Element (January 1996), "a daily disposal capacity shortfall of approximately 4,600 tons per day (6-day week) will be experienced by 1999. This shortfall would increase to nearly 18,000 tons per day (6-day week) upon expiration of the Puente Hills Landfill Conditions Use Permit in November 2003." This analysis considered: (1) Only the existing permitted disposal capacity; (2) full implementation of AB 939 waste diversion programs; and (3) the full use of the permitted

disposal capacity available at the recently approved expansion of the Sunshine Canyon Landfill beginning July 1, 1996.

The shortage disposal capacity is especially acute for waste generated within the City of Los Angeles (City), which generates more than a third of the County's waste. As a result of previous legal disputes, the City is restricted from using three of the Los Angeles County-operated landfills (i.e., Puente Hills, Scholl Canyon, and Spadra). In addition, only a small portion of the City of Los Angeles that falls within the Calabasas wasteshed is authorized to use Los Angeles County's Calabasas Landfill. Consequently, the City depends primarily on the City-operated Lopez Canyon Landfill and the privately operated Bradley West, BKK, and Chiquita Canyon Landfills for the disposal of up to 2 to 3 million tons of waste a year. As noted previously, all four of these landfills will have reached their permitted capacity or their permit to operate will have expired by the year 2000. Sunshine Canyon Landfill, with its expected reopening in mid-1966, will provide some of the needed disposal capacity for City-generated waste; but this additional capacity will be insufficient to meet total City short-term disposal needs.

Orange County. Orange County has adequate short-term disposal capacity. Because of its recent bankruptcy, Orange County has recently decided to allow importation of approximately 6,500 tons per day of waste from surrounding counties. Contracts have been signed, and waste is being or will soon be imported from the counties of San Diego and Los Angeles.

Santa Barbara County. By 1999, the County of Santa Barbara will have inadequate daily disposal capacity when Tajiguas and Foxen Canyon Landfills reach permitted capacity. Santa Barbara County is currently trying to obtain permits to expand Tajiguas Landfill. If the permit to expand Tajiguas Landfill is not obtained, Santa Barbara County could have a shortfall in disposal capacity of 600 tons per day by the year 2000.

San Diego County. Although the County of San Diego currently has adequate short-term disposal capacity, several cities in northern San Diego County are investigating alternative, remote disposal sites, including out-of-state facilities because of high local disposal costs. Two cities are currently hauling their waste approximately 150 miles by truck to a landfill in Los Angeles County. One city is hauling waste to a landfill in La Paz County, Arizona.

Ventura County. Although Ventura County has adequate short-term disposal capacity, the western part of the county will experience a 1,200-tpd shortfall of capacity as a result of the scheduled closure of Bailard Landfill in May 1997.

Summary of Short-term Disposal Capacity Requirements. In summary, the amount of waste, if any, that will be hauled to remote landfills in the short term is difficult to estimate. Many factors will determine where jurisdictions dispose of their waste, including: (1) the repermitting and expansion of local landfills, (2) the cost of local versus remote disposal, and (3) the possibility of intra-county transfer of waste. As noted in the Draft Countywide Siting Elements cited above, many of the counties in the Region have expressed interest in having

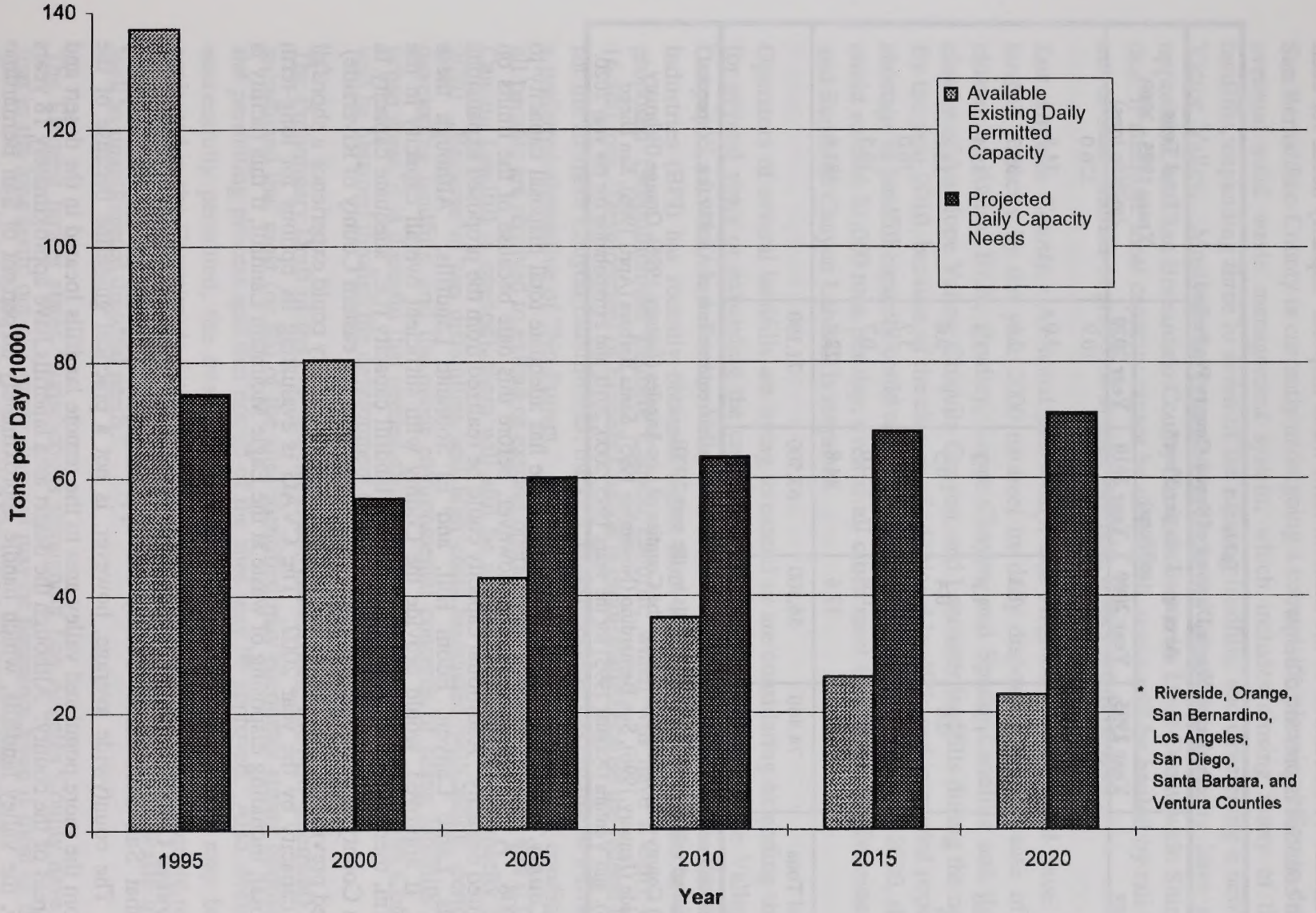
the capability to dispose of waste in remote locations as a backup resource because: (1) there are numerous uncertainties associated with predicting precisely the availability of adequate landfill capacity and (2) some existing landfills could be closed prior to the expiration of their permit due to noncompliance with environmental regulations and the high cost of compliance. In a draft report prepared by staff of the Southern California Association of Governments (SCAG, August 1995), the following strategic public policy action was recommended to facilitate the disposal of solid waste in Southern California: "Local governments in Southern California should actively pursue a coordinated effort to cite one or more environmentally safe rail-haul solid waste sanitary landfills in the region, including the provision of the needed recycling and transfer facilities. "

The following narrative was included in this report to justify the need for this public policy action:

"'Close-in' existing sanitary landfill sites are reaching capacity in much of the urbanized parts of the region and new environmentally and politically acceptable sites are becoming increasingly more difficult to find and put in operation. A number of rail-accessible sites are in various stages of development both within the region and in adjacent states. Some uncertainties exist about the future of solid waste rail-haul to other states, which point to the importance of in-state sites. In order for rail-haul sites to be successful economically, waste commitment agreements are an important ingredient that require a coordinated regional effort. Sanitary landfills need to be environmentally engineered to provide the safest level of protection. It is important that local governments and the private sector coordinate their actions to provide necessary recycling and transfer facilities to support waste-by-rail operations and that these efforts be closely tied to the timing of landfill beginning operations."

Medium-term Disposal Capacity Requirements. In the medium term (1995 to 2020), approximately 481 million tons of waste from the seven-county Region will require disposal. This estimate assumes that all cities and unincorporated county areas achieve a 50 percent diversion of waste by the year 2000, as mandated by AB 939. A summary of the annual disposal requirements and the total amount of waste for the 25-year period for each of the seven counties is presented in Table 1-4. Waste requiring disposal could be reduced if communities exceed the 50 percent mandate for the amount of waste that is reduced, recycled, and composted.

Based upon the projected disposal tonnages as presented in Table 1-4, there is inadequate existing permitted disposal capacity in the Region to meet its medium-term needs. As shown in Figure 1-4, a shortage in regionwide daily permitted disposal capacity will occur sometime between the years 2000 and 2005 if no new capacity is obtained through repermitting or expansion of existing landfills or the development of new landfill capacity. By the year 2020, approximately 48,000 tons per day of additional permitted disposal capacity will be required to meet the Region's needs. While, overall, there is a clear need for additional disposal capacity, the need varies considerably from county to county and within specific wastesheds



Source: Draft Countywide Siting Element for the Counties of Los Angeles (January 1996); Orange (February 1995); Riverside (January 1996); San Bernardino (November 1995); Santa Barbara (April 1996); San Diego (August 1995) and Ventura (August 1995) for the Years 1995 through 2010, extrapolated to the Years 2015 and 2010.

Figure 1-4
Combined Projected Disposal Capacity Needs and Available Capacity (1995-2020) for the Seven-county* Wasteshed Area
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL®

in some counties. A discussion of the medium-term waste disposal capacity needs for each of the seven counties is presented below.

Table 1-4
Projected Waste Disposal of Seven-County Wasteshed

County	Average Tons per Year* (millions)				Total Tons Years 1995 - 2000 (million tons)
	Year 1995	Year 2000	Year 2010	Year 2020	
Los Angeles	11.7	8.6	9.9	10.9	226.0
Orange	3.9	2.8	2.9	3.0	74.8
Riverside	1.3	1.3	1.6	2.0	39.7
San Bernardino	1.5	1.3	1.3	1.5	35.4
Santa Barbara	0.6	0.4	0.5	0.6	13.0
San Diego	3.4	2.6	3.0	3.7	76.0
Ventura	0.8	0.6	0.6	0.7	16.5
Total	23.2	17.6	14.8	22.4	481.4
Daily Disposal Tons per Day 6 days/week	74,460	56,500	63,500	71,100	

*These figures assume that communities will meet the waste diversion requirements of AB 939 (i.e., 50 percent of waste generated will be diverted from landfills by the year 2000).
Source: Draft Countywide Siting Element for the Counties of Los Angeles (January 1996), Orange (February 1995), Riverside (January 1996), San Bernardino (November 1995), Santa Barbara (April 1996), San Diego (August 1995), and Ventura (August 1995) for the years 1995, 2000, 2010, and extrapolation for the year 2020.

Riverside County. Overall, the County of Riverside has adequate total disposal capacity to the year 2008. A shortage could occur, however, before this date because of the limits on daily permitted capacity. Additional capacity could be realized from the proposed expansions at Badlands, Lamb Canyon, Edom Hill, and El Sobrante Landfills. Although these expansions, if approved, would provide the County with sufficient overall capacity in the medium term, there is a geographical disparity in landfill capacity (i.e., adequate capacity in the western County of Riverside and inadequate capacity in the eastern County of Riverside). As discussed previously, the Coachella Valley area of the county could experience a shortfall of landfill capacity by the year 2002. The CVAG is evaluating its options for long-term waste disposal, including disposing of waste at the Eagle Mountain Landfill, if this facility is developed.

San Bernardino County. The San Bernardino County Solid Waste Management Department estimates that San Bernardino County has approximately 10 years of disposal capacity available. The countywide average, however, is not a practical guideline because of the distance from the more populated valley area to the remote landfills located in the desert and mountain areas of the county. Although the desert area landfills have approximately 18 years of capacity, the valley landfills, which handle approximately 80 percent of San Bernardino County's waste, have only 6 years of available capacity based on the San Bernardino County Solid Waste Management Department estimates.

San Bernardino County is currently undergoing a countywide planning effort to determine its eventual solid waste management system, which includes closing many of the smaller landfills, expanding three to seven of the existing landfills, and developing a new landfill in Victor Valley. Most of the proposed projects for increasing capacity have some local opposition, and San Bernardino County has indicated in its Draft Countywide Siting Element that, if adequate local capacity cannot be developed, waste will be hauled by rail to existing out-of-state landfills or proposed in-state landfills, if they are developed.

Los Angeles County. As noted previously, Los Angeles County could have inadequate landfill capacity by the year 2000 to meet its daily disposal needs because of the likely closure of Azusa, BKK, Bradley, Lopez Canyon, and Spadra Landfills and the potential closure of Antelope Valley, Chiquita Canyon, and Lancaster landfills during the next 5 years. By the year 2010, because of the closure of additional landfills and increased population, the shortage in landfill capacity could reach 25,000 tons per day. By the year 2020, the shortage could exceed 31,000 tons per day, even if all cities meet their AB 939 diversion objectives and Sunshine Canyon Landfill is reopened.

Operators of several landfills are trying to extend or are considering extending their permits for several years or expanding the capacity of the landfill (i.e., Antelope Valley, Chiquita Canyon, Lancaster, and Puente Hills landfills) to continue operation. Browning-Ferris Industries (BFI) has recently obtained rights from BKK to obtain permits to develop the proposed 190-million-ton Elsmere Canyon Landfill, which will have a daily capacity of 16,500 tons. Development of Elsmere Canyon is problematic because the federal lead agency for the Elsmere Canyon Landfill EIS, the U.S. Forest Service, has circulated a Draft EIS with a preferred alternative of "No Project." Even under the most favorable of conditions (i.e., if all permits are received to extend or expand operation of existing landfills and if the Elsmere Canyon Landfill is opened), there will still be a shortfall in disposal capacity by the year 2020. Because of the difficulties and high costs associated with siting, permitting, and developing landfills, and the major environmental concerns of siting landfills near major urban areas, it is doubtful that needed disposal capacity to meet Los Angeles County's needs will be obtained through the development of new local landfills.

The Preliminary Draft of the Los Angeles Countywide Siting Element (Element) states "It is recognized that most (or all) of the sites identified may encounter strong opposition during the permitting process and that not all of the sites may be approved. Also, even if a site is successfully permitted, the total approved capacity and daily capacity may be less than projected in the Countywide Siting Element's analysis. Additionally, adequate reserve daily capacity should be provided to handle daily and seasonal variations in waste quantities as well as unanticipated disposal needs."

The Element further states "Jurisdictions throughout Los Angeles County have recognized that in the long term, out of County disposal may be necessary, even if most of the potential disposal capacity identified in the Countywide Siting Element is permitted."

In obtaining the permit to extend operations of Puente Hill Landfill to the year 2003, the County Sanitation Districts of Los Angeles County committed in their certified EIR (County Sanitation Districts of Los Angeles County, USFS, and Los Angeles County Department of Regional Planning, January 1995) to export up to 4,000 tons of waste per day from Los Angeles County by the year 2005. The City of Los Angeles has also committed to the export of solid waste. In the adopted City of Los Angeles Solid Waste Management Policy Plan, dated April 1993, it is stated that "It is the policy of the City of Los Angeles that the City shall have the ability to transport either by rail or truck a portion of the waste requiring disposal after diversion to remote locations outside the County of Los Angeles, provided such disposal is environmentally safe, technically feasible, and publicly acceptable."

Orange County. With the opening of the Frank R. Bowerman Landfill (formerly Bee Canyon Landfill) in 1990, Orange County has adequate capacity to meet medium-term needs. By the year 2025, however, when the Frank R. Bowerman Landfill is expected to close, Orange County will have insufficient permitted available capacity to dispose of approximately 8,000 tons of waste a day. Orange County is currently not pursuing any options for developing additional landfill capacity and now allows the importation of out-of-county waste to generate additional funds because of the recent bankruptcy. This import of waste could slightly alleviate the disposal capacity shortfalls in some neighboring counties but will result in a shortfall in available disposal capacity to meet the needs of cities in Orange County before the year 2025. Without importing waste, adequate local disposal capacity exists to meet Orange County's needs to the year 2020.

Santa Barbara County. As described previously, the County of Santa Barbara will have a shortfall in permitted daily disposal capacity of approximately 600 tons per day by the year 2000. Santa Barbara County is currently in the process of permitting the Phase I expansion of Tajiguas Landfill. Three other phases of expansion are planned. If all four phases of expansion of the Tajiguas landfill occur, Santa Barbara County will have sufficient landfill capacity to meet its medium-term and long-term needs. If additional capacity cannot be obtained, Santa Barbara County would be required to transport its waste to out-of-county disposal facilities as no other options are being pursued.

San Diego County. The County of San Diego will experience a shortfall in disposal capacity of approximately 2,000 tons per day by the year 2005, based on existing permitted capacity. By the year 2025, the shortfall will be approximately 10,000 tons per day. The City of San Diego is currently evaluating three sites for the potential of developing a landfill that could dispose of up to 4,800 tons per day for at least 25 years. If environmental review, land use approval, and permitting are completed by the year 2000, the preferred site would begin operations by the year 2005. The County of San Diego has identified potential sites for the development of one landfill in the north county area and one landfill in the south county area. The tentative schedule is to begin detail planning for the development of the north county landfill in the year 2007 and the south county landfill in the year 2009. To meet the County's projected year 2020 disposal requirements, the permitting and development of the proposed City of San Diego landfill and at least one landfill in either the north or south county areas will be required. If these two landfills cannot be permitted and constructed, San Diego

County would be required to use out-of-county disposal facilities for at least a portion of its waste.

Ventura County. Most of the County of Ventura's waste is currently disposed of in the Simi Valley Landfill and the Bailard Landfill in Oxnard. The Simi Valley Landfill's conditional use permit (CUP) expires in 2004, and the Bailard Landfill is expected to reach capacity in 1996. The only landfill with existing permitted capacity available for local disposal after the year 2004 is the Toland Road Landfill, which currently can accommodate less than 5 percent of Ventura County's waste. Ventura County is in the process of preparing an EIR to increase the capacity of the Toland Road Landfill. Because of the failure to site the Weldon Canyon Landfill, Ventura County is reviewing export of waste to out-of-county sites in addition to reviewing proposals by private vendors to expand existing landfills or develop new in-county landfills to meet its disposal needs.

Summary of Medium-term Disposal Capacity Requirements. With the exception of the County of Orange, there is inadequate existing disposal capacity to meet each of the counties' medium-term needs. As indicated in Figure 1-4, the shortage in disposal capacity in the Region could reach 48,000 tons per day by the year 2020. Some of the needed increase in disposal capacity could result from repermitting and expanding the capacity of existing landfills. For the majority of these landfills, this will extend their life by 10 or fewer years. Even if all proposed repermitting or expansions of existing landfills were approved, which is unlikely, there still will be a shortage in the seven-county region in disposal capacity of over 20,000 tons per day by the year 2020.

Another option for obtaining additional disposal capacity is siting, developing, and permitting new local landfills. Several counties are considering developing new local disposal capacity. Only one site located in Los Angeles County (Elsmere Canyon), however, has initiated an extensive environmental review process. Even if this landfill is developed, Elsmere Canyon would only partially solve Los Angeles County's disposal requirements; and a shortfall in disposal capacity would still occur in Los Angeles County before the year 2020. With the exception of new landfills in San Diego County, the other new landfills being considered will service only small outlying urban and rural areas.

The only other waste disposal option for most of the counties (even after recycling, source reduction, and other waste diversion) is transporting waste by rail to remote disposal facilities. As discussed in Section 1.3.2.3, there are several out-of-state landfills that currently exist and two in-state Southern California landfills in addition to Eagle Mountain currently in the permitting stage that have the capabilities to accept waste by rail.

Long-term Disposal Capacity Requirements. Over the long term (1995 to 2050), approximately 1.3 billion tons of waste will require disposal from the seven-county Region. This estimate assumes that all cities and unincorporated areas achieve a 50 percent diversion by the year 2000. By the year 2050, the total daily disposal needs of the Region could reach 105,000 tons, which is equivalent to the daily disposal capacity limits of five to six developments the size of the proposed Eagle Mountain Landfill. Waste requiring disposal

from the seven-county Region could be reduced if communities achieve greater diversion rates than what is currently mandated by the state. Existing local permitted capacity and additional local permitted capacity options currently being pursued by counties in the seven-county Region will accommodate only a small portion of the Southern California region's long-term disposal needs.

1.3.1.3 Remote Disposal Capacity

In addition to the proposed Eagle Mountain Landfill, there are two other remote landfills in Southern California currently in the process of obtaining the necessary approvals to accept waste. These two proposed landfills are the Rail Cycle-Bolo Station Landfill and the Mesquite Regional Landfill. Rail Cycle proposes to develop a waste-by-rail system at the proposed Bolo Station Landfill, located in eastern San Bernardino County, which would also accept up to 21,000 tons per day of solid waste for the next 60 to 100 years. The proposed Mesquite Regional Landfill, which is located in Eastern Imperial County, would also accept waste by rail from other Southern California counties. The Mesquite Landfill would have the capacity to accept up to 20,000 tons a day for the next 100 years. These proposed landfills are discussed in more detail in Section 2.8.3.

In addition to the three proposed remote landfills in Southern California (Eagle Mountain, Bolo Station, and Mesquite Landfills), there are several out-of-state regional landfills in the western United States. These include La Paz County Landfill in Parker, Arizona; Butterfield Station Landfill in Phoenix, Arizona; East Carbon Canyon Landfill in eastern Utah; Columbia Ridge Landfill in Arlington, Oregon; and Roosevelt Landfill in the State of Washington. Most of these landfills have large capacities and would be willing to accept waste from Southern California. Although these out-of-state landfills could provide short-term solutions to communities that have no immediate alternative, it is uncertain that they will provide a dependable long-term solution to the Region's disposal needs for the following reasons:

- Although these landfills have the capability to service large areas including most of the western and central United States, the cost of transporting waste to out-of-state landfills increases proportionately with the distance from the source of the waste.

- Many jurisdictions in Southern California, including CSDLAC, have indicated the desire to haul to sites in the state.

- Some of the out-of-state disposal facilities (i.e., La Paz and Butterfield) currently do not have direct-rail access.

- Federal laws and regulations are continuously in flux; future new regulations and/or amendments to existing laws could affect long-term accessibility to out-of-state sites.

- Many of the out-of-state facilities have not undergone the extensive environmental reviews that are required for landfills in the State of California. Disposing of waste in these facilities might not be politically or environmentally acceptable.
- Special export fees are being considered by the State of California to offset the loss of disposal fees needed by the state to monitor solid waste regulatory compliance and fund waste reduction efforts, which could further increase the cost of remote rail-haul disposal.

In the short term, at least one rail-haul landfill facility will be needed to ensure that adequate alternative disposal sites are available for those jurisdictions in the Region that could encounter a shortfall in disposal capacity during the next 5 years. For the following reasons, more than one site could be developed to: (1) ensure competitive disposal pricing, (2) provide redundancy in the instance that one facility must prematurely or temporarily close, (3) provide excess disposal capacity to ensure adequate capacity in the event of natural disasters and other emergencies resulting in the creation of additional demand for disposal capacity, and (4) ensure competition by more than one rail line and to facilitate competitive pricing for waste transport. In addition, if a cost-effective remote disposal option were available, some jurisdictions could choose to use these landfills to conserve local landfill capacity or close existing landfills that are either costly to operate or are in noncompliance with environmental regulations.

By the year 2020, two or three rail-haul disposal facilities could be required, each with a disposal capacity of up to 20,000 tons per day of waste, to meet projected disposal requirements. In addition to these additional facilities, other rail haul facilities could be required for the long term unless new disposal technologies are developed for the environmentally safe and cost-effective disposal of waste and/or significant decreases in per capita generation of waste.

The Project applicant, MRC, has had discussion with various private companies about transporting waste from any of the seven counties who have expressed potential interest to use the Eagle Mountain Landfill under a long-term contract arrangement. In addition, MRC has had discussions with various Southern California cities, counties, and sanitation districts concerning long-term commitment of solid waste flow to the site. These discussion have included the County of Riverside Waste Resources Management District, Los Angeles County Sanitation Districts, the City of Los Angeles, San Diego County, San Bernardino County, and Ventura County. MRC and Kaiser have also had discussions regarding selling a portion of the landfill, by way of equity or air space, to both private companies and government entities. In the future, these discussions could result in one or more agreements for commitment of waste, selling of equity, operating, or selling of air space to occur.

1.3.2 Project Objectives

In accordance with CEQA, the following objectives have been identified for the Project.

1.3.2.1 County of Riverside

The proposed County action is based on the County's authority for reviewing land use applications (i.e., Specific Plans for the proposed landfill and the Townsite) for the proposed landfill and the Townsite. In making a decision on the pending land use applications, the County will consider the following County objectives.

- Provide the County and jurisdictions within the County with environmentally sound, long-term disposal capacity for waste generated within the County.
- Provide the County with income from the disposal fees for out-of-county waste disposed of at the site.
- Provide for the acquisition and preservation of valuable open space lands in environmentally sensitive areas, for the preservation and enhancement of biological, scenic, and cultural resources in the County, and research and education concerning conservation of natural resources. This activity will be funded through the contribution of one dollar per ton of waste deposited at the landfill into a mitigation monitoring trust fund administered by the County.
- Reclaim lands disturbed by previous mining activities.
- Assist jurisdictions within the County that use the site for solid waste disposal to meet the long-term landfill capacity as set forth by state law (AB 939).
- Provide a remote, regional municipal solid waste landfill that allows transportation of waste primarily by rail and uses existing transportation infrastructure.
- Provide long-term disposal capacity to allow the County to continue closing existing unlined landfills within the County.

1.3.2.2 Project Proponents (Kaiser and MRC)

The primary objective of MRC, the proponent of the landfill component of the Project, is to construct and operate a Class III nonhazardous municipal solid waste disposal facility that satisfies the following criteria:

- Is located on property owned or controlled by Kaiser, and/or on property that can be acquired by Kaiser through a land exchange
- Is located adjacent to transportation routes for which Kaiser possesses, or can acquire, all necessary rights-of-way

- Is located adjacent to the large quantities of mining overburden generated by former mining activities at the Kaiser mining site, so that such overburden can be used in construction of the landfill

- Satisfies all applicable environmental and permitting requirements for a Class III nonhazardous municipal solid waste disposal facility

The primary purpose/objective of Kaiser, the proponent of the Townsite component of the Project and a significant investor in MRC, is to:

- Renovate and reuse existing structures in the Townsite, in a manner consistent with the construction and operation of the landfill

- Establish long-term land use and development of goals for the renovation and reuse of the Townsite

- Provide a long-term income source for a pension plan that supports retirees of the former Kaiser Steel Corporation

1.4 Intended Uses of the Environmental Impact Statement/Environmental Impact Report and Project Approvals

1.4.1 General

The proposed Eagle Mountain Project is subject to local, state, and federal approvals for construction and/or operation. Under NEPA, a ROD must be issued for this EIS. Under CEQA, this EIR must be certified by the County before other responsible state agencies can issue permits under separate regulatory authority. Relying on the environmental documentation in this EIR prepared by the County, each of the responsible state agencies will also undertake an independent review of the Eagle Mountain Landfill and apply its own regulatory requirements before issuing any permits. The permits required for the proposed Project are shown in Table 1-5.

1.4.2 Federal Approvals

Three federal agencies (i.e., the BLM, the U.S. Army Corps of Engineers, and the U.S. Fish and Wildlife Service) are responsible for issuing federal approvals for the Project. Many of the state approvals (see Section 1.4.3), however, are given under authorization from the federal government.

Table 1-5
Eagle Mountain Landfill and Recycling Center EIS/EIR

Required Permits and Approvals

Agency/Institution	Permit/Approval/Agreement
County of Riverside	1. Development Agreement No. 64
County of Riverside	2. Specific Plan No. 305 (Landfill)
County of Riverside	3. General Plan Amendment No. 402 (Landfill)
County of Riverside	4. Change of Zone No. 6249 (Landfill)
County of Riverside	5. Revised Permit No. 158 to Reclamation Plan No. 107
County of Riverside	6. Specific Plan No. 306 (Townsite)
County of Riverside	7. General Plan Amendment No. 405 (Townsite)
County of Riverside	8. Change of Zone No. 6253 (Townsite)
County of Riverside	9. Tentative Tract Map No. 28217 (Townsite)
BLM	10. BLM-Kaiser Land Exchange (CACA 30070)
BLM	11. Eagle Mountain Road ROW (CACA 31926)
BLM	12. Eagle Mountain Railroad ROW (CACA 25594)
U.S. Army Corps of Engineers	13. Section 404 Fill Permit
USFWS and BLM	14. Section 7 (No Jeopardy Opinion) Consultation/Supplemental Opinion
California RWQCB/SWRCB	15. Waste Discharge Requirements
California RWQCB/SWRCB	16. National Pollutant Discharge Elimination System (NPDES)
California RWQCB/SWRCB	17. Section 401 Water Quality Certification/Waiver
California Department of Fish and Game	18. Section 1603 Streambed Alteration Agreement
California Department of Fish and Game	19. Section 2081 Game Management Permits

Table 1-5
Eagle Mountain Landfill and Recycling Center EIS/EIR
Required Permits and Approvals

Agency/Institution	Permit/Approval/Agreement
South Coast Air Quality Management District	20. Air Quality Permits • Separate Permits to Construct and Operate: • Internal Combustion Engine (2) • Storage Tanks (2) • Fuel Storage and Dispensing Facility (Planning Area No. 3) • Fuel Storage and Dispensing Facility (Planning Area No. 2) • Paint Spray Booth • Open Abrasive Blasting System • Landfill Gas Condensate/Leachate Collection and Storage System • Receiving and Storage System • Air Pollution Control System • Landfill Gas Flare Station • Landfill Gas Collection System
California Integrated Waste Management Board County of Riverside Department of Environmental Health	21. Solid Waste Facilities Permit
California State Historic Preservation office	22. National Historic Preservation Act, Section 106 Consultation

RWQCB: California Regional Water Quality Control Board
SWRCB: State Water Resources Control Board
BLM: U.S. Bureau of Land Management
USFWS: United States Fish and Wildlife Service
ROW: right-of-way

1.4.2.1 Bureau of Land Management

As discussed in Section 1.2.4, the BLM's role in authorizing the action is to approve a land exchange with Kaiser and right-of-way grants to Kaiser. Under the proposed land exchange, BLM would convey approximately 3,481 acres of disturbed mining lands to Kaiser, and Kaiser would convey to the BLM approximately 2,846 acres of desert land containing habitat for environmentally sensitive species. In addition, the BLM would grant rights-of-way for the Eagle Mountain Road (and its extension) and the Eagle Mountain Railroad.

1.4.2.2 U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (COE) is responsible for issuing permits for activities within the waters or headwaters of the United States. Many of the dry stream and drainage crossings located in the proposed Project site and rights-of-way require issuance of either an individual or nationwide permit by COE under Section 404 of the Clean Water Act. These permits contain construction requirements and the mitigations required to address construction impacts. A Section 404 permit was previously issued on June 28, 1994. The expiration date of the Section 404 permit is June 27, 1996.

1.4.2.3 U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) is responsible for oversight of the federal Endangered Species Act (ESA). As required by Section 7 of the ESA, the BLM consulted with the USFWS on potential impacts to the desert tortoise (a federally listed threatened species) and the desert pupfish (a federally listed endangered species). In September 1992, the USFWS issued a "no jeopardy" biological opinion, together with a number of required conditions and mitigation measures. On August 30, 1993, the USFWS formally promulgated proposed critical habitat areas for the desert tortoise. In response, on September 1, 1993, the BLM again formally initiated consultation with the USFWS about the effect of the landfill on threatened and endangered species. Upon review, the USFWS again confirmed its "no jeopardy" opinion. The USFWS will be asked to reconsider its conclusions in light of this EIS/EIR process.

1.4.3 State Approvals

State of California and local County approvals are also necessary to develop and operate the Eagle Mountain Landfill. To obtain these permits, the landfill must first be approved and an EIR certified by the local jurisdiction, in this case Riverside County.

In November 1992, the County certified the previous EIR (State Clearinghouse No. 8908413) and issued local land use approvals for the Project. MRC subsequently obtained 17 of the 21 additional regulatory agency permits required for construction and operation of the landfill. In September 1994, the Superior Court for the County of San Diego issued a Writ of Mandate vacating the County's certification of the EIR and requiring the County's land use approvals to be voided.

During the scoping process for this EIS/EIR, a concern was raised that the Notice of Preparation (NOP) issued by the County was inaccurate because it stated that many previously issued regulatory agency permits for the Project were still valid but would need to be re-evaluated in light of the new EIR.

The County responded in writing to the expressed concern, noting that the San Diego Superior Court Judgment and Writ of Mandate vacating the EIR certification and Project approvals were directed to the County of Riverside approvals and certification of the EIR; the issuance and validity of other regulatory (responsible) agency permits was not before the Court, and that only those parties properly before a court may be bound by any judgment of that court. In addition, the County stated that the provisions of Public Resources Code Section 21168.9 provide that a court's Writ of Mandate must be limited to those specific deficiencies identified by the court in the matter before it. (Correspondence from County of Riverside Planning Department, Aleta J. Lawrence to Mr. Laurence and Mrs. Donna Charpied, June 12, 1995.) In response, on August 10, 1995, Laurence and Donna Charpied petitioned the San Diego County Superior Court for an ex parte Order to set a hearing on an Order to Show Cause Re: Contempt against the County of Riverside as a result of the Charpieds' allegation of deficiencies in the NOP. (See Request for Ex Parte Order Re: Contempt, Action No. 663033, in and for the County of San Diego.) The Court denied the Charpieds' request to set the contempt citation matter for hearing, issuing a ruling on August 11, 1995, that the Charpieds' challenge was premature and that judicial intervention prior to the County's final decision to approve or carry out the Project would be inappropriate.

In the event that the County certifies this EIR and approves the Project, responsible agencies that previously issued permits for the Project would re-evaluate and reconsider issuance of these permits in light of any new information concerning the potential impacts of the Project contained in this EIR. Each of these required approvals for the Project and the basic approval processes are discussed below.

1.4.3.1 California Regional Water Quality Control Board/State Water Resources Control Board

The RWQCB, Colorado River Basin Region, has jurisdiction for three permits. First, the RWQCB is responsible for reviewing the Report of Waste Discharge (ROWD) prepared by MRC for the Eagle Mountain Landfill. This review process must include the RWQCB's review of the ROWD for completeness. If the ROWD is determined by the RWQCB to be complete, the RWQCB must (1) write a set of tentative Waste Discharge Requirements (WDRs); (2) take public comment on those draft requirements; and (3) vote on whether to issue the WDRs as drafted, with modifications, or to deny the WDRs. Approved WDRs constitute the permit that regulates the type of waste, liner system design and construction requirements, and the operational and postoperational groundwater and vadose (unsaturated) zone monitoring requirements. This permit is issued under the authority granted the RWQCB (Title 23, Chapter 15 of the California Code of Regulations and Subtitle D of Title 40 of the Code of Federal Regulations). The WDRs were issued on May 17, 1994.

After the Court's decision, the State Water Resources Control Board (SWRCB) determined that the WDRs would have to be reconsidered by the RWQCB based on the new EIR.

Second, the RWQCB also works with the SWRCB to certify that the landfill meets state water quality objectives pursuant to Section 401 of the federal Clean Water Act. The RWQCB can recommend certification or denial of certification to the SWRCB, or the RWQCB can waive certification. In May 1994, the 401 certification requirements were waived.

Lastly, the SWRCB is responsible for issuing a general stormwater runoff National Pollutant Discharge and Elimination System (NPDES) permit for site construction and operation activities. This permit is required to ensure that surface water controls are implemented.

1.4.3.2 South Coast Air Quality Management District

Under the federal Clean Air Act, the South Coast Air Quality Management District (SCAQMD) has jurisdiction for approving administrative permits for stationary equipment and sources that could be used in the operation of the landfill. Stationary equipment includes fuel tanks, generators, sand blasting equipment, fuel dispensers, and rail sanding equipment, as well as the leachate collection system, the gas collection system, and the gas flares. The permit applications must show compliance with SCAQMD rules, or in some cases, calculated emissions must be below certain emission levels.

For the proposed Eagle Mountain Landfill, 13 permit applications for construction of various stationary equipment, including a landfill gas flare station (consisting of two landfill gas flares) and a landfill gas collection system, were submitted in 1993. SCAQMD reviewed the applications and issued (in 1993) 11 of the permits necessary to operate the site. A public notice of its intent to grant the permits for the gas flare station and landfill gas collection system was issued in Spring 1994. During the public comment period, written comments were received from interested parties, including the U.S. Environmental Protection Agency (EPA). After the close of the public comment period, SCAQMD and EPA developed draft permit conditions; and SCAQMD stated its intention to issue the permits. Before the permits were issued, the previous EIR for the Eagle Mountain Project was decertified. The permits are being held in abeyance by SCAQMD pending the certification of this new EIR. In September 1995, MRC paid its annual fees for the 11 permits previously issued.

EPA, which is responsible for the federal Prevention of Significant Deterioration (PSD) permit program, has determined that the landfill is not subject to federal PSD requirements. The PSD program is designed to protect air quality in regions that meet federal air quality standards, such as the region where the proposed Eagle Mountain Project is located.

1.4.3.3 California Department of Fish and Game

The California Department of Fish and Game (CDFG) is responsible for issuing two applicable permits under the California Endangered Species Act (CESA). First, a

Section 2081 CESA Memorandum of Understanding (MOU) was entered into between MRC and CDFG on May 16, 1994. This MOU details the requirements necessary to ensure that sensitive species of wildlife will be adequately protected during construction and operation of the Project. This CESA MOU expires 99 years after the date of execution. Second, MRC also entered into a Section 1603 Streambed Alteration Agreement with CDFG that outlines acceptable levels of activities in streambeds and appropriate mitigation for erosion and protects biological habitat in streambed areas. On June 8, 1994, the CDFG issued a 1603 Streambed Alteration Agreement authorizing work within the dry desert washes located at the landfill site, the container handling yard, and along Eagle Mountain Road and Eagle Mountain Railroad. This agreement expires on April 30, 2006.

1.4.3.4 California Integrated Waste Management Board

The CIWMB has responsibility under AB 939 for concurring with or denying the Solid Waste Facilities Permit (SWFP) issued by the Local Enforcement Agency (LEA), as described in Section 1.4.4.2. All other state and local permits and land use approvals must be made before LEA issues the SWFP. After the LEA issues the SWFP, the CIWMB staff reviews the Report of Disposal Site Information (RDSI) and SWFP and conducts a public hearing before the Permitting and Enforcement Committee and another public hearing before the full CIWMB. For the proposed Eagle Mountain Landfill, the RDSI and a permit application for the SWFP was submitted to the LEA on March 24, 1994. The application was never deemed complete, as the last three required permits were not received and the land exchange had not occurred.

1.4.3.5 Office of State Historic Preservation

According to Section 106 of the National Historic Preservation Act, a determination must be made regarding properties eligible for listing. Consultation occurred with the State Historic Preservation office during preparation of the previous EIS/EIR, and a determination was made that no eligible properties were in the Project area.

1.4.4 Local Approvals

1.4.4.1 County of Riverside, Planning Department

As discussed in Section 1.2.5, the County of Riverside has local land use jurisdiction over the Project. For the landfill, the County has the responsibility for reviewing Specific Plan No. 305, General Plan Amendment No. 402, Change of Zone No. 6249, Development Agreement No. 64, and the Revised Permit No. 158 to Reclamation Plan No. 107. For the Townsite, the County has the responsibility for approving Specific Plan No. 306, General Plan Amendment No. 405, Change of Zone No. 6253, and Tentative Tract Map No. 28217.

1.4.4.2 County of Riverside, Environmental Health Department

As discussed in Section 1.4.3.4, under Title 14 of the California Code of Regulations and AB 939, the LEA is responsible for writing and issuing an SWFP to operators of solid waste facilities including landfills. In the County of Riverside, the County Environmental Health Department is the LEA charged with this responsibility. MRC must submit a RDSI to the LEA that details the specific operation of the Eagle Mountain Landfill, including the type and origin of waste, the type of equipment used for transporting waste and operating the Eagle Mountain Landfill, the inspection and emergency situation procedures, and how the Eagle Mountain Landfill will eventually be closed and monitored. The LEA must review the RDSI

Specific

and either issue or deny a permit. All other state and local permits for the Eagle Mountain Landfill must be approved before the LEA can issue the SWFP. The SWFP contains operating conditions with which the owner/operator must comply. If any of the operational aspects change significantly, the owner/operator must initiate repermitting. In addition to this provision, a SWFP must be evaluated at least once every 5 years, or more frequently, as determined by the LEA.

1.5 Consultation and Coordination

1.5.1 Public Scoping Process

In accordance with CEQA, a NOP was delivered on May 6, 1995, to the California Office of Planning and Research (OPR) and the State Clearinghouse for distribution to state agencies. The NOP also was circulated to agencies, cities, government officials, interested groups, and interested members of the public to initiate the public scoping process. In compliance with NEPA regulations (Title 40, CFR 1508.22), the BLM prepared and circulated a Notice of Intent (NOI) to agencies, cities, government officials, interested groups, and interested members of the public. The NOI was published in the *Federal Register* on May 12, 1995. On June 6, 1995, the BLM submitted a correction notice clarifying the case number for publication in the *Federal Register.* The NOP, the NOI, and a list of parties receiving these documents is in Appendix A. Appendix A also contains a summary of scoping comments and a page referencing where each issue is addressed in the EIS/EIR.

Four public scoping meetings were held in the County over a 2-day period to solicit public and agency comments for consideration in the EIS/EIR: scoping meetings were held in Palm Desert and Desert Center on May 31, 1995, and in Riverside and Hemet on June 1, 1995. In addition to the public scoping meetings, a series of individual agency scoping meetings were held from February through August 1995. Participating state agencies were CIWMB, RWQCB, SWRCB, CDFG, SCAQMD, and the California Air Resources Board. The federal agencies were the NPS, the NBS, EPA, USFWS, and the BLM. Local agencies included several departments of the County of Riverside. Separate scoping meetings were also held with litigants in two of the three legal challenges to the previous EIR (i.e., the Eagle Crest Energy Corporation and Larry and Donna Charpied.) The third litigant group (the National Parks Conservation Association and others) either sent written comments, commented in scoping sessions, declined to meet, or did not respond to requests to meet.

Approximately 500 agencies, organizations, and individuals were sent copies of the NOP and/or the NOI prepared by the BLM and the County, respectively. Parties receiving the NOP/NOI were notified of the four scheduled public scoping meetings and invited to attend the meetings. The NOP and the NOI requested recipients to submit written comments on the Project and identify issues of concern to be addressed in the EIS/EIR. Appendix A includes copies of the NOP and NOI; a list of all agencies, organizations, individuals to whom the NOP and/or the NOI were sent; and a summary of issues raised during the scoping process.

1.5.2 Cooperating Agencies

The NPS and the NBS are cooperating agencies under NEPA for the Project. NEPA defines a cooperating agency as any federal agency, other than the lead agency, with legal jurisdiction or special expertise with respect to the environmental impacts expected to result from a project (40 CFR 1508.5; 1501.6). As a cooperating agency, the NPS and NBS have the responsibility to participate in the NEPA process as early as possible; participate in the scoping process; on the lead agency's request, develop information to be included in the EIS; and provide staff support in its preparation [40 CFR 1501.6(b)]. The NPS and the NBS have participated in the preparation of this EIS/EIR throughout the NEPA process; NPS and NBS were involved in the scoping process and have contributed information included throughout the EIS/EIR.

1.6 Impacts That Cannot Be Mitigated

The air quality effects of the Project are considered a significant impact. The increases in air emissions in the South Coast Air Basin resulting from the long distance transport of solid waste and the incremental increase of emissions in the Southeast Desert Air Basin cannot be entirely avoided (see Section 4.4). For biological resources, the loss of the Kaiser mine adit for bat roost habitat is considered a significant adverse impact that cannot be mitigated.

Impacts to resource components that comprise the wilderness experience (e.g., visual resources) can be quantitatively assessed using measurable significance standards based on CEQA guidelines and can be mitigated to a level below significance. The intangible components of an individual's wilderness experience (e.g., peace, solitude), however, cannot be quantitatively evaluated. Because of the subjective nature of the intangible part of the wilderness experience, these qualitative indicators of an individual's personal feelings in a wilderness setting cannot be specifically defined using quantitative significance criteria. In the absence of significance criteria, CEQA requires a mandatory finding of significance; therefore, the effects to the "wilderness experience," but not to "wilderness resources" is considered a significant impact.

1.7 Summary of Project Impacts, Mitigation, and Monitoring

Table 1-6 summarizes the environmental effects of the proposed Project and alternatives. Each environmental issue listed in Table 1-6 is discussed in the order in which the environmental resource areas are presented in this document. The summary table describes potential impacts resulting from the proposed Project and alternatives, recommended mitigation measures, and resulting level of significance after implementation of recommended mitigation measures.

1.8 Summary of Cumulative Impacts

Impacts occurring as a result of cumulative projects in the vicinity of the proposed Eagle Mountain landfill operation depend on future uses of the area, such as the possible resumption of mining activity or the construction of Eagle Crest Energy Company's proposed hydroelectric project. Regionally, continued residential development in and around Blythe and continued development of utilities are anticipated. Increased air emissions in both the South Coast Air Basin and the Southeast Desert Air Basin would be the most significant cumulative effect resulting from the proposed Project and other projects of a regional nature.

Implementation of the Project is not anticipated to contribute to any cumulative impacts other than those associated with degradation of air quality, mortality of some juvenile Desert Tortoise, habitat loss for Alverson's Foxtail Cactus, and increased regional water consumption resulting in groundwater depletion from the Eagle Crest Energy Company's proposal to operate a pumped storage hydroelectric project or agricultural water use. The cumulative impacts considered significant after mitigation are air quality (because the Project is located in a nonattainment air basin) and groundwater overdraft. These impacts are described in Section 5 and summarized in Table 1-6.

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
GROUNDWATER QUALITY AND USE (SECTION 4.1)							
Groundwater Quality							
Impact	Slight potential for degradation of groundwater due to migration of leachate	No impact	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Mitigation Measures	Landfill liner system; Leachate collection and removal system; Vadose zone monitoring system; Groundwater monitoring system; Final cover	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	N/A	Not significant	Not significant	Not significant	Not significant	Not significant
Impact	Slight potential for degradation of groundwater due to migration of landfill gas (LFG)	No impact	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Mitigation Measures	LFG containment and control system; Vadose zone monitoring system; Landfill liner system	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	N/A	Not significant	Not significant	Not significant	Not significant	Not significant
Impact	Potential degradation of groundwater due to contaminant releases from landfill-support facilities	No impact	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Mitigation Measures	Regulatory compliance for hazardous substance containment, monitoring, and reporting	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	N/A	Not significant	Not significant	Not significant	Not significant	Not significant

Table 1-6 Summary of Project and Alternatives' Impacts and Mitigation							
Issues	**Proposed Action**	**No Action**	**Reduced Volume of Onsite Disposal**	**Alternative Road Access**	**Rail Access Only**	**Landfill on Kaiser Land Only**	**Landfill Development/ No Townsite Development**
Groundwater Use							
Impact	No significant impacts requiring mitigation identified	No impact	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
PUBLIC HEALTH AND SAFETY (SECTION 4.2)							
Hazardous Substances							
Impact	Potential for exposure to hazardous substances at equipment maintenance facilities, and working face of landfill	No impact	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Mitigation Measures	Facility design, construction, and operation; Regulatory compliance for hazardous substance containment, disposal, monitoring, and reporting	Not required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	N/A	Not significant	Not significant	Not significant	Not significant	Not significant
Landfill Gas/LFG Condensate							
Impact	Potential hazards due to migration and accumulation of landfill gas and condensate	No impact	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	No impact
Mitigation Measures	Landfill liner system; Leachate collection and removal system; Vadose zone monitoring systems; Groundwater monitoring system; Final cover; Gas collection system	Not required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	N/A	Not significant	Not significant	Not significant	Not significant	Same as proposed Project

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
Fires							
Impact	Potential for LFG, subsurface, surface, refuse, and right-of-way fires	No impact	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Mitigation Measures	Proper operation/maintenance of LFG collector system; Staged response for control of subsurface fires in emergency response plan; retain large watering trucks and earth moving equipment for onsite emergency response; regular inspection/removal of vegetation posing right-of-way fire hazard	Not required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	N/A	Not significant	Not significant	Not significant	Not significant	Not significant
Vectors and Disease							
Impact	Potential for landfill to be used by animals, birds, and insects for foraging and/or breeding, which may result in an increased potential for disease transport	No impact	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Mitigation Measures	Daily application of earthen cover material per state regulations; bird control barriers/measures; Final closure cap; Operational practices	Not required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	N/A	Not significant	Not significant	Not significant	Not significant	Not significant

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
Worker Safety							
Impact	Potential exposure to noise, dust, odors, landfill gas, bodily injury, and unsafe materials	No impact	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Mitigation Measures	Compliance with state/federal occupational health and safety regulations; Use of standard safety procedures for employee handling of refuse, including use of personal protective equipment, use of enclosed cabs on heavy equipment, rotation of worker assignments, and adequate supervision of personnel	Not required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	N/A	Not significant	Not significant	Not significant	Not significant	Not significant
TRAFFIC AND TRANSPORTATION (SECTION 4.3)							
Impact	No significant impacts requiring mitigation identified	No impact	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
AIR QUALITY (SECTION 4.4)							
Impact	Degradation of air quality due to increased emissions in both the South Coast Air Basin and the Southeast Desert Air Basin due to increased emissions from motor vehicles, including train locomotives, on-highway haul trucks, and off-highway heavy equipment	Due to continuing requirement for Southern California landfill capacity, this alternative is projected to result in emissions approximately equivalent in magnitude to those of the proposed Project; Total emissions compared to proposed Project: NOx (84%); CO (223%); PM10 (99%); VOC (214%); SO2 (74%)	This alternative is projected to result in emissions approximately equivalent in magnitude to those of the proposed Project; Total emissions compared to proposed Project: NOx (81%); CO (85%); PM10 (79%); VOC (81%); SO2 (80%)	Same as proposed Project	This alternative is projected to result in emissions approximately equivalent in magnitude to those of the proposed Project; Total emissions compared to proposed Project: NOx (79%); CO (84%); PM10 (83%); VOC (86%); SO2 (88%)	This alternative is projected to result in emissions approximately equivalent in magnitude to those of the proposed Project; Total emissions compared to proposed Project: NOx (81%); CO (85%); PM10 (79%); VOC (81%); SO2 (80%)	Same as proposed Project
Mitigation Measures	Compliance with state and federal on- and off-road vehicle emission regulations; Preferential "clean fuel" use as appropriate; Preferential low- or zero-emission vehicle and equipment purchases; Active dust suppression; Selective vehicle/equipment shut-downs; BACT for LFG recovery	Similar to those of the proposed Project with the exception of fleet equipment and LFG flare emission requirements	Same as proposed Project	Same as proposed Project	Same as proposed Project, without truck-related measures	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Significant remaining impact due to exceedance of emission and concentration-based thresholds.	No net emission reduction benefit attributable to proposed Project.	Significant remaining impact due to exceed-ance of emission and concentration-based thresholds.	Significant remaining impact due to exceed-ance of emission and concentration-based thresholds.	Significant remaining impact due to exceed-ance of emission and concentration-based thresholds.	Significant remaining impact due to exceed-ance of emission and concentration-based thresholds.	Significant remaining impact due to exceed-ance of emission and concentration-based thresholds.

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
Significance After Mitigation	Impacts cannot be completely reduced to below a level of significance	Impacts will be similar in magnitude to those of the proposed Project, resulting in a significant impact on air quality	Impacts will be similar in magnitude to those of the proposed Project, resulting in a significant impact on air quality	Impacts will be similar in magnitude to those of the proposed Project, resulting in a significant impact on air quality	Impacts will be similar in magnitude to those of the proposed Project, resulting in a significant impact on air quality	Impacts will be similar in magnitude to those of the proposed Project, resulting in a significant impact on air quality	Impacts will be similar in magnitude to those of the proposed Project, resulting in a significant impact on air quality
LAND USE (SECTION 4.5)							
Compatibility with Existing Land Uses							
Impact	Potential impacts to existing residential and correctional facility uses	No impact	Same as proposed Project	Same as proposed Project	Noise, air quality, and traffic impacts to existing and surrounding land uses from refuse trucks along Kaiser Road would be eliminated	Same as proposed Project	Increased landfill employee commute; potential increased hazards due to building deterioration
Mitigation Measures	Restrict transfer truck traffic to designated roads; maintain minimum 25-foot setback and maximum 60-foot height for all buildings; maintain berms to partially obscure views onto project site; control fugitive dust; install sound attenuating walls and landscape buffers as needed	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	N/A	Not significant	Not significant	Not significant	Not significant	Not significant

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
Compatibility with Surrounding Land Uses							
Impacts	No significant impacts requiring mitigation identified	No impact	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Consistency with Plans and Policies							
Impacts	Inconsistent with Riverside County General Plan and zoning ordinance (land use, open space, and solid waste management elements); Consistent with BLM land use plans	No impact	Same as proposed Project	Same as proposed Project except right-of-way grant for Eagle Mountain Road would not be required	Same as proposed Project	Same as proposed Project	Same as proposed Project except no zone change would be required and no Specific Plan for the Townsite would be required
Mitigation Measures	Completion of County General Plan Amendment, Zone Change, Development Agreement, Revised Reclamation Plan, Specific Plans (landfill and existing Townsite), BLM/Kaiser land exchange; obtain permits from CDFG and USFWS	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	None required
Significance After Mitigation	Not significant	N/A	Not significant	Not significant	Not significant	Not significant	Not significant

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
SURFACE WATER DRAINAGE AND FLOODING (SECTION 4.6)							
Major Washes and Drainages							
Impact	Potential drainage impacts (erosion, plant/animal life, flooding, debris deposition) to the East Pit, Townsite, and alluvial areas east of Project site	No impact	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Mitigation Measures	Project design features, consistent with Riverside County Flood Control District stipulations, including: installation of temporary and permanent perimeter drainage control system; slope final landfill not greater than 3 percent	Not required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	N/A	Not significant	Not significant	Not significant	Not significant	Not significant
BIOLOGICAL RESOURCES (SECTION 4.7)							
Desert Tortoise							
Impact	Permanent loss of individuals and habitat, potential increased raven predation, potential harassment of individuals (noise and vibration)	No impact; precludes high quality habitat land exchange and contributions to Environmental Mitigation Trust	Similar to proposed Project; May result in fewer tortoise mortalities; reduced contributions to Environmental Mitigation Trust	Reduces permanent loss of habitat (widening of Eagle Mountain Road), and impacts from truck traffic; other potential impacts similar to proposed Project	Reduces permanent loss of habitat (widening of Eagle Mountain Road), and impacts from truck traffic; other potential impacts similar to proposed Project	Similar to proposed Project; no land exchange precludes protection and management of high quality habitat; reduced contributions to Environmental Management Trust	Reduced potential for Townsite domestic animal impacts; potential for increased road kills

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
Mitigation Measures	High quality habitat land exchange; Environmental Mitigation Trust contribution—$1/ton; limits on individual deaths/removals; survey and monitor prior to and during construction/maintenance; relocate individuals from railroad bed; install culvert system and protective fence; preserve offsite habitat; implement raven control and monitoring; worker education	Not required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	N/A; Continued degradation and fragmentation of habitat	Reduction in funding for land acquisitions for habitat protection	Not significant	Reduction in funding for land acquisitions for habitat protection	Significant	Similar to proposed Project
Bighorn Sheep							
Impacts	Loss of water sources and habitat; potential indirect effects from residential Townsite population; potential disruption of sheep movement	No impact; precludes high quality habitat land exchange and contributions to Environmental Mitigation Trust	Similar to proposed Project; reduced contributions to Environmental Mitigation Trust	Reduces permanent loss of habitat (widening of Eagle Mountain Road), and impacts from truck traffic; other potential impacts similar to proposed Project	Reduces permanent loss of habitat (widening of Eagle Mountain Road), and impacts from truck traffic; other potential impacts similar to proposed Project	Similar to proposed Project; no land exchange precludes protection and management of high quality habitat; reduced contributions to Environmental Management Trust	Reduced potential for Townsite domestic animal impacts

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
Mitigation Measures	Purchase of high quality habitat; Environmental Mitigation Trust contribution—$1/ton; Install three permanent water sources far from mine site to encourage bighorn sheep to use surrounding natural areas; these sites and their design to be approved by biologists at BLM and CDFG; rehabilitate Buzzard Springs and clear of Tamarisk; if sheep are not naturally expanding their ranges to incorporate new sources, translocate them; preserve buffer habitat areas around landfill (644 acres); monitor sheep movement; conduct employee awareness program	Not required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	None required
Significance After Mitigation	Not significant	N/A; Continued degradation and fragmentation of habitat	Not significant; Reduction in funding for land acquisitions for habitat protection	Not significant	Not significant; Reduction in funding for land acquisitions for habitat protection	Not significant; Reduction in funding for land acquisitions for habitat protection	Not significant
Desert Pupfish							
Impacts	Potential habitat loss from rail accident or major construction on trestle over habitat; potential impacts to water quality resulting in fish kills	No impact; precludes high quality habitat land exchange and contributions to Environmental Mitigation Trust	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
Mitigation Measures	Annually monitor pupfish (by CDFG); if major construction is necessary, incorporate protective measures in plans and monitor construction/maintenance activities; include biologist on emergency response team and restore any habitat disturbed by accident; locomotive fuel tank inspections prior to passage over Salt Creek; manual, nonchemical weed abatement; establish experimental population at Deep Canyon Preserve; implement employee education program; implement provisions of CDFG Streambed Alteration Agreement	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	N/A	Not significant	Not significant	Not significant	Not significant	Not significant
Other Sensitive Wildlife							
Impacts	Potential loss of California leaf-nosed bat roosting areas hibernacula; increased raven predation on Eagle Mountain	No impact	Same as proposed Project	Increased truck distance traveled would expose more wildlife to road kill	Same as proposed Project	Same as proposed Project	Same as proposed Project
Mitigation Measures	Monitor bat roost sites; maintain adit opening; monitor and control ravens	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Potential for bat roost habitat loss after mitigation; others not significant	N/A	Potential for bat roost habitat loss after mitigation; others not significant	Potential for bat roost habitat loss after mitigation; others not significant	Potential for bat roost habitat loss after mitigation; others not significant	Potential for bat roost habitat loss after mitigation; others not significant	Potential for bat roost habitat loss after mitigation; others not significant

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
Sensitive Plant Species							
Impacts	Loss of 158 acres of foxtail cactus habitat	No impact	Same as proposed Project	Same as proposed Project	Same as proposed Project	Reduced impacts to Alverson's foxtail cactus	Same as proposed Project
Mitigation Measures	Preserve 157 acres of foxtail cactus onsite; continue transplant program for lost cacti on suitable areas within project boundary; monitor transplants once a month for one growing season; submit monitoring report to BLM, CDFG, and USFWS	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	N/A	Not significant	Not significant	Not significant	Not significant	Not significant
Biodiversity and Ecosystem Function							
Impacts	No significant impacts requiring mitigation identified	No impact	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
GROWTH INDUCEMENT AND SOCIOECONOMICS (SECTION 4.8)							
Impacts	No significant impacts requiring mitigation identified	Positive socioeconomic impacts precluded	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
GEOLOGY AND MINERAL RESOURCES (SECTION 4.9)							
Soils and Geology							
Impacts	Potential exists for settlement within alluvial soils, for expansive soils, and for surficial instability	No impacts	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
Mitigation Measures	Identify expansive soils in alluvial material within the landfill footprint and regrade, as necessary; determine the safe slope angles and maintain slopes within this range; identify need to flatten slopes or construct fill buttresses; excavate and/or recompact unsuitable soils prior to liner construction; place liner against safe slope angles	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	N/A	Not significant	Not significant	Not significant	Not significant	Not significant
Seismic Hazards							
Impacts	Potential ground shaking, fault rupture, liquefaction, slope instability, settlement	No impact	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Mitigation Measures	Design containment facilities to withstand M-6.5 event located 5 miles from site; shear strength values will be specified for man-made slopes; remove loose alluvium and replace with compacted fill prior to construction facilities	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	N/A	Not significant	Not significant	Not significant	Not significant	Not significant
Mineral Resources							
Impacts	No significant impact requiring mitigation identified	No impact	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
VISUAL AND RECREATION (SECTION 4.10)							
Visual Resources—Contrast							
Impacts	Potential for increased visual contrast with existing landscape	No impact	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Mitigation Measures	Blend the topographic contours of the landfill with adjacent landforms, and minimize color and tone contrast of the final cover; use screening berms along southern and eastern edge of the active working area to obscure views.	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	Site will remain disturbed by previous mining activity	Not significant	Not significant	Not significant	Not significant	Not significant
Views from Eagle Mountain Townsite							
Impacts	The proposed Project will have a significant impact on the views from the community of Eagle Mountain; however, that impact will not be visible for several decades; visual contrast will be decreased over time	Currently, the views from the community are significantly impacted by the imposing tailing pile, the exposed slopes, and scarred areas; this high level of impact would remain	Same as proposed Project	Same as proposed Project	Incremental improvement over proposed Project	Reduction in size and scale of landfill	Same as proposed Project
Mitigation Measures	Phase project and renovate Townsite	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	A significant impact is associated with this alternative	Not significant	Not significant	Not significant	Not significant	Not significant

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
Windblown Debris and Dust							
Impacts	Potential for windblown debris and dust	No impact	Extended period of potential impact due to extended landfill life	Same as proposed Project	Extended period of potential impact due to extended landfill life	Potentially less than proposed Project due to shorter Project life span	Same as proposed Project
Mitigation Measures	Transport refuse materials to the site and to the face of the landfill in closed containers, compacted and covered on a daily basis; water haul roads regularly; install fencing and regularly patrol for litter retrieval; develop an active storm and early warning procedure for extremely windy conditions and response plan to ensure timely and complete cleanup of accidental spills	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	N/A	Not significant	Not significant	Not significant	Not significant	Not significant
Night Lighting							
Impacts	No significant impacts requiring investigation identified	No impact	Same as proposed Project	Slightly higher than proposed Project due to truck traffic	Same as proposed Project	Same as proposed Project	Same as proposed Project
Mitigation Measures	Limit landfill activities no later than 10 p.m.; provide low-pressure sodium safety and security lights; direct lighting downward to light only the immediate area	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	N/A	Not significant	Not significant	Not significant	Not significant	Not significant

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
Recreation Resources							
Impacts	No significant impacts requiring mitigation identified	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
WILDERNESS (SECTION 4.11)							
Wilderness Resources							
Impacts	Refer to impacts and mitigation measures for components of wilderness resources (Water Quality, Public Health and Safety, Air Quality, Traffic and Transportation, Land Use, Surface Water Biological Resources, Socioeconomics, Geology and Mineral Resources, Visual and Recreation Wilderness, Utilities, Noise, Cultural Resources, Paleontology and Energy	No impact	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Mitigation Measures	Refer to measures identified for wilderness resources components	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	N/A	Not significant	Not significant	Not significant	Not significant	Not significant
Wilderness Experience							
Impacts	Potential for subjective aesthetic impacts to certain individuals	No impact	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Mitigation Measures	No known mitigation measures exist	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Potential for remaining significant impact for certain individuals	N/A	Potential for remaining significant impact for certain individuals	Potential for remaining significant impact for certain individuals	Potential for remaining significant impact for certain individuals	Potential for remaining significant impact for certain individuals	Potential for remaining significant impact for certain individuals

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
UTILITIES AND SERVICES (SECTION 4.12)							
Water and Sewer							
Impacts	No significant impacts requiring mitigation identified	No impact	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Fire, Police, and Emergency Medical Services							
Impacts	No significant impacts were identified for police protection; significant fire protection impacts were identified due to inadequate staffing and water system capacity and flow	No impact	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	No impact
Mitigation Measures	None required for police protection; obtain written agreement for fire protection services from the Riverside County Fire Department; submit a Fire/Life Safety and Emergency Response Plan to the Fire Department; install water mains and fire hydrants to provide the required fire flows; participate in the fire protection impact mitigation program as adopted by the Riverside County Board of Supervisors; obtain clearance from RCFD to reoccupy existing dwellings and buildings	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	None required
Significance After Mitigation	Not significant	N/A	Not significant	Not significant	Not significant	Not significant	Not significant

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
Utilities							
Impacts	No significant impacts requiring mitigation identified	No impacts	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Community Facilities							
Impacts	No significant impacts requiring mitigation identified	No impacts	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
NOISE (SECTION 4.13)							
Rail Traffic on Southern Pacific Railroad							
Impact	No significant impacts requiring mitigation identified	No impacts	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Rail Traffic on Eagle Mountain Railroad							
Impact	Potential to exceed noise ordinance at Townsite for Rail Yard I	No impacts	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Mitigation Measures	Divide rail traffic between Rail Yards I and II	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	N/A	Not significant	Not significant	Not significant	Not significant	Not significant
Vehicles							
Impact	Potential to exceed noise ordinance at select locations within Townsite	No impacts	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Mitigation Measures	Divert/reduce traffic along Kaiser Road to Phase I container handling yard; restrict nighttime traffic along Kaiser Road near Townsite	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	N/A	Not significant	Not significant	Not significant	Not significant	Not significant

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
Landfill Operations							
Impact	Potential to exceed noise ordinance at selected locations with Townsite	No impacts	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Mitigation Measures	Restrict landfill equipment operating locations during nighttime hours; close Rail Yard I during nighttime hours; reconstruct Townsite residences to meet HUD requirements	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	N/A	Not significant	Not significant	Not significant	Not significant	Not significant
Landfill Construction							
Impact	No significant impacts requiring mitigation identified	No impacts	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
CULTURAL RESOURCES (SECTION 4.14)							
Impacts	No significant impacts requiring mitigation identified	No impacts	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
PALEONTOLOGY (SECTION 4.15)							
Impacts	Excavations within portions of Eagle Mountain Mine and improvements to Eagle Mountain Road at the Interstate 10 exit have the potential to impact paleontologic resources; rehabilitation and maintenance of the rail line will not impact paleo resources	No impacts	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
Mitigation Measures	Pre-excavation survey, excavation monitoring; fossil preparation, identification, and storage, and preparation of a report by a qualified paleontologist; this report shall be submitted to Riverside County, BLM, and San Bernardino County Museum; rehabilitation and maintenance of the rail line will not require mitigation	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Not significant	N/A	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
ENERGY CONSUMPTION AND GENERATION (SECTION 4.16)							
Impacts	No significant impacts requiring mitigation identified	No impacts	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
CUMULATIVE IMPACTS (SECTION 5.0)							
ECEC Hydroelectric Project							
Impacts	Potential for significant cumulative impacts related to: water quality and use (overdraft); air quality; land use; biological resources; growth/ socio-economics; and visual/recreation resources	No impact	Similar to, but of lesser magnitude than proposed project	Similar to, but of lesser magnitude than proposed project	Similar to, but of lesser magnitude than proposed project	Similar to, but of lesser magnitude than proposed project	Similar to, but of lesser magnitude than proposed project

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
Mitigation Measures	Groundwater Quality—Refer to Section 4.1 mitigation measures Air Quality —Refer to Section 4.4 mitigation measures Land Use—Refer to Section 4.5 mitigation measures Biology—Refer to Section 4.7 mitigation measures Growth/socioeconomics—Refer to Section 4.8 mitigation measures	None required	Same as proposed project	Same as proposed project	Same as proposed project	Same as proposed project	Same as proposed project
Significance After Mitigation	Air Quality and Groundwater Quality and Use—Cumulative impacts will not be reduced below a level of significance All Others—Not significant	N/A	Same as proposed project	Same as proposed project	Same as proposed project	Same as proposed project	Same as proposed project
Joshua Tree National Park							
Impacts	Potential for significant cumulative impacts to air quality associated with increased visitor use at JTNP	No impact	Similar to, but of lesser magnitude than proposed project	Similar to, but of lesser magnitude than proposed project	Similar to, but of lesser magnitude than proposed project	Similar to, but of lesser magnitude than proposed project	Similar to, but of lesser magnitude than proposed project
Mitigation Measures	Air Quality—Refer to Section 4.4 mitigation measures	None required	Same as proposed project	Same as proposed project	Same as proposed project	Same as proposed project	Same as proposed project
Significance After Mitigation	Air Quality—Cumulative impacts will not be reduced below a level of significance	N/A	Air Quality—Cumulative impacts will not be reduced below a level of significance	Air Quality—Cumulative impacts will not be reduced below a level of significance	Air Quality—Cumulative impacts will not be reduced below a level of significance	Air Quality—Cumulative impacts will not be reduced below a level of significance	Air Quality—Cumulative impacts will not be reduced below a level of significance

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
La Paz County Regional Landfill							
Impacts	Potential for significant cumulative impacts related to: air quality; biological resources; and traffic	Air Quality—Due to continuing requirement for Southern California landfill capacity, this alternative is projected to result in cumulative impacts approximately equivalent in magnitude to those of the proposed Project	Air Quality—This alternative is projected to result in cumulative impacts approximately equivalent in magnitude to those of the proposed Project	Same as proposed Project	Air Quality—This alternative is projected to result in cumulative impacts approximately equivalent in magnitude to those of the proposed Project	Air Quality—This alternative is projected to result in cumulative impacts approximately equivalent in magnitude to those of the proposed Project	Same as proposed Project
Mitigation Measures	Air Quality—Refer to Section 4.4 mitigation measures Biology —Refer to Section 4.7 mitigation measures	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Air Quality—Cumulative impacts will not be reduced below a level of significance Biology—Not significant	Air Quality—Impacts will continue to be similar in magnitude to those of the proposed Project, resulting in a significant cumulative impact on air quality	Air Quality—Cumulative impacts will not be reduced below a level of significance Biology—Not significant	Air Quality—Cumulative impacts will not be reduced below a level of significance Biology—Not significant	Air Quality—Cumulative impacts will not be reduced below a level of significance Biology—Not significant	Air Quality—Cumulative impacts will not be reduced below a level of significance Biology—Not significant	Air Quality—Cumulative impacts will not be reduced below a level of significance Biology—Not significant

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
Rail Cycle - Bolo Station Landfill							
Impacts	Potential for significant cumulative impacts related to: air quality	Air Quality—Due to continuing requirement for Southern California landfill capacity, this alternative is projected to result in cumulative impacts approximately equivalent in magnitude to those of the proposed Project	Air Quality—This alternative is projected to result in cumulative impacts approximately equivalent in magnitude to those of the proposed Project	Same as proposed Project	Air Quality—This alternative is projected to result in cumulative impacts approximately equivalent in magnitude to those of the proposed Project	Air Quality—This alternative is projected to result in cumulative impacts approximately equivalent in magnitude to those of the proposed Project	Same as proposed Project
Mitigation Measures	Air Quality—Refer to Section 4.4 mitigation measures	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Air Quality—Cumulative impacts will not be reduced below a level of significance	Air Quality—Impacts will continue to be similar in magnitude to those of the proposed Project, resulting in a significant cumulative impact on air quality	Air Quality—Cumulative impacts will not be reduced below a level of significance	Air Quality—Cumulative impacts will not be reduced below a level of significance	Air Quality—Cumulative impacts will not be reduced below a level of significance	Air Quality—Cumulative impacts will not be reduced below a level of significance	Air Quality—Cumulative impacts will not be reduced below a level of significance
Mesquite Regional Landfill							
Impacts	Potential for significant cumulative impacts related to: public health & safety; traffic/transportation; air quality; and biological resources	Air Quality—Due to continuing requirement for Southern California landfill capacity, this alternative is projected to result in cumulative impacts approximately equivalent in magnitude to those of the proposed Project	Air Quality—This alternative is projected to result in cumulative impacts approximately equivalent in magnitude to those of the proposed Project	Same as proposed Project	Air Quality—This alternative is projected to result in cumulative impacts approximately equivalent in magnitude to those of the proposed Project	Air Quality—This alternative is projected to result in cumulative impacts approximately equivalent in magnitude to those of the proposed Project	Same as proposed Project

Table 1-6
Summary of Project and Alternatives' Impacts and Mitigation

Issues	Proposed Action	No Action	Reduced Volume of Onsite Disposal	Alternative Road Access	Rail Access Only	Landfill on Kaiser Land Only	Landfill Development/ No Townsite Development
Mitigation Measures	Public Health & Safety—Refer to Section 4.2 mitigation measures Traffic & Transportation—Refer to Section 4.3 mitigation measures Air Quality—Refer to Section 4.4 mitigation measures Biology —Refer to Section 4.7 mitigation measures	None required	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project	Same as proposed Project
Significance After Mitigation	Air Quality—Cumulative impacts will not be reduced below a level of significance All Others—Not significant	Air Quality—Impacts will continue to be similar in magnitude to those of the proposed Project, resulting in a significant cumulative impact on air quality	Air Quality—Cumulative impacts will not be reduced below a level of significance All Others—Not significant	Air Quality—Cumulative impacts will not be reduced below a level of significance All Others—Not significant	Air Quality—Cumulative impacts will not be reduced below a level of significance All Others—Not significant	Air Quality—Cumulative impacts will not be reduced below a level of significance All Others—Not significant	Air Quality—Cumulative impacts will not be reduced below a level of significance All Others—Not significant

2.0 Description of the Proposed Action and Alternatives

This section describes the proposed action requiring preparation of this *Draft Eagle Mountain Landfill and Recycling Center Environmental Impact Statement/Environmental Impact Report* (EIS/EIR) and the alternatives to the Proposed Action. The alternatives to the proposed Project were developed in accordance with both the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) requirements for analysis of a reasonable range of Project alternatives.

NEPA requirements for alternatives analysis (40 CFR 1502.14) direct federal agencies to:

- Consider a range of alternatives that could accomplish the applicant's purpose and need and present the alternatives in comparative form to define the issues and provide a clear basis for decisionmakers and the public to choose among options.

- Explore rigorously and evaluate objectively a reasonable range of alternatives. If alternatives have been eliminated from detailed study, the EIS must briefly discuss the reasons they were eliminated. The range of alternatives is project specific, depending on the nature of the proposal and the facts and circumstances of the project.

- Analyze each alternative to a degree that is substantially similar to the analysis afforded the Proposed Action.

- Identify the "Environmentally Preferable" alternative from the range of alternatives considered. This alternative is considered to be the one that best promotes the environmental policy expressed in NEPA.

- Include a "no action" alternative.

The CEQA Guidelines [Article 9, Section 15126(d)] require an evaluation describing a range of reasonable alternatives "which would reasonably attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." Specific elements to consider are:

- **Purpose.** "The discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives or would be more costly." [Section 15126(d)(1)]

- **Reasonable Range of Alternatives.** The EIR is required to include alternatives that "could feasibly accomplish most of the basic purposes of the project and could avoid or substantially lessen one or more of the significant effects." [Section 15126(d)(2)]

- **Evaluation.** The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison of the proposed project. If an alternative to the proposed project results in significant effects (in addition to those caused by the proposed project), the significant effects of the alternatives shall be discussed but in less detail than the significant effects of the project as proposed. [Section 15126(d)(3)]
- **No Project.** A "no project" alternative must be evaluated with the impact. If the "no project" alternative is not the environmentally superior alternative, the EIR is required to identify an environmentally superior alternative among the other alternatives. [Section 15126(d)(4)]
- **Rule of Reason.** The "rule of reason," which requires that the EIR sets forth only those alternatives that are necessary to permit a reasoned choice, governs the required range of alternatives to be included in an EIR. An EIR must examine in detail only the alternatives "that the lead agency determines could feasibly attain most of the basic objectives of the project." In addition, "the range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision making." [Section 15126(d)(5)]

The alternatives considered in this EIS/EIR are: (1) No Action, (2) Reduced Volume of Onsite Disposal, (3) Alternate Road Access, (4) Rail Access Only, (5) Landfill on Kaiser Land Only, and (6) Landfill Development/No Townsite Development. The alternatives considered but eliminated from further consideration are: (1) Landfill on Other Kaiser Property, (2) Waste Diversion, (3) Proposed Offsite Landfill Locations, (4) Landfill Mining, (5) Alternative Townsite Locations, and (6) Alternative Townsite Land Use and Densities. These alternatives were rejected because they either do not meet the Project objectives or they are not within the jurisdiction of the County (i.e., other regional landfills not located in the County of Riverside are discussed in Section 5, Cumulative Impacts). This Draft EIS/EIR does not identify a BLM-preferred alternative or alternatives as was done in the previous EIS/EIR. After the public comments on this Draft EIS/EIR have been assessed, an agency-preferred alternative or alternatives will be identified in the Final EIS/EIR.

2.1 Proposed Action

This section describes the proposed Eagle Mountain Project considered in this EIS/EIR. The Project comprises the following features: (1) the approval of a land exchange between Kaiser and the Bureau of Land Management (BLM); (2) the issuance of two right-of-way grants from the BLM to Kaiser; (3) the approval of land use applications for the landfill and the Eagle Mountain Townsite (Townsite) by the County of Riverside (County); (4) the development of a Class III nonhazardous municipal solid waste landfill (i.e., the Eagle Mountain Landfill) proposed by Mine Reclamation Corporation (MRC) on property leased by Kaiser Eagle Mountain, Inc. (Kaiser) to MRC; and (5) the renovation and resulting repopulation of the existing, adjacent Townsite proposed by Kaiser on property owned by Kaiser.

MRC and Kaiser, a wholly-owned subsidiary of Kaiser Ventures Inc., propose to develop the Eagle Mountain Project at the Kaiser Eagle Mountain Mine in Riverside County, California.

In mid-1994, Browning-Ferris Industries (BFI), an owner of 50 percent of the common stock in MRC, withdrew from participation in the landfill project. BFI management, in a presentation before the California Integrated Waste Management Board's Permit Reform Workshop, stated that BFI would no longer invest in any new landfill development in California unless the state's permitting process for landfills was made significantly less costly, less time-consuming, and more certain. BFI went on to state that it believes California is not competitive and not a welcome environment for continued investment in new landfill projects.

Kaiser subsequently obtained a 70 percent equity interest in MRC in consideration of relieving MRC of its contractual obligation to pay monthly lease payments ranging from $200,000 to $300,000 prior to site opening. Since that time, MRC and Kaiser have had ongoing discussions with private companies and public entities about interest in participating in the project through a commitment of waste, an operating contract, prepurchase of disposal rights, and/or the acquisition of an equity position in MRC. It is possible that MRC and Kaiser may contract with a private or public entity to operate the landfill or to acquire all or a portion of the equity in MRC. At this time, these discussions are preliminary but ongoing.

Kaiser, which owns portions of the Eagle Mountain Project site in fee and holds unpatented mining and mill site claims on other areas of the proposed Project site, has leased its interest in the proposed landfill site to MRC. The portions of the Project site not owned in fee by Kaiser are owned by the United States Government and are administered by the BLM. These lands are proposed to be conveyed to Kaiser by the BLM as part of the BLM/Kaiser land exchange. Figures 1-1 and 1-2, respectively, show the regional setting and the site location of the Eagle Mountain Project.

The following sections discuss the proposed land exchange, the right-of-way grants, and the County land use approvals (including descriptions of the proposed Project for the Townsite and the landfill).

2.1.1 Land Exchange between Bureau of Land Management and Kaiser (Bureau of Land Management, Environmental Impact Statement)

In the proposed land exchange, the BLM would convey ownership of 3,481 acres of mostly disturbed mining lands to Kaiser, and the BLM would acquire from Kaiser approximately 2,846 acres of land. The lands proposed to be conveyed to Kaiser by the BLM (or "selected lands") are shown in Figure 2-1, and the lands proposed to be conveyed to the BLM by Kaiser (or "offered lands") are shown in Figures 2-2 and 2-3.

Federal lands currently within the proposed Eagle Mountain Project area are depicted in the *California Desert Conservation Area Plan* (BLM, CDCA Plan, 1980, amended). These lands are classified as the following Multiple-Use Classes:

- Class I: Intensive
- Class M: Moderate
- Unclassified

In the 1980 California Desert Conservation Area (CDCA) Plan, nonhazardous waste disposal sites were allowed in areas identified as Classes I and M. A 1985 amendment to the CDCA Plan prohibited use of public lands for disposal of either hazardous or nonhazardous waste after the date of the amendment (BLM, 1989). Kaiser has selected public lands for proposed transfer to private ownership, and land currently owned by Kaiser is offered in exchange for those selected lands. The land exchange will be made pursuant to the Federal Land Policy and Management Act of 1976 as amended, (FLPMA, Title II, Section 206), and implementing regulations. Appraisals on both the selected and offered lands were previously prepared for the proposed exchange, and these will be updated prior to a decision being made by the BLM. The values of the federal and nonfederal lands to be exchanged will be equalized either by adjustments to acreage or through cash equalization payment.

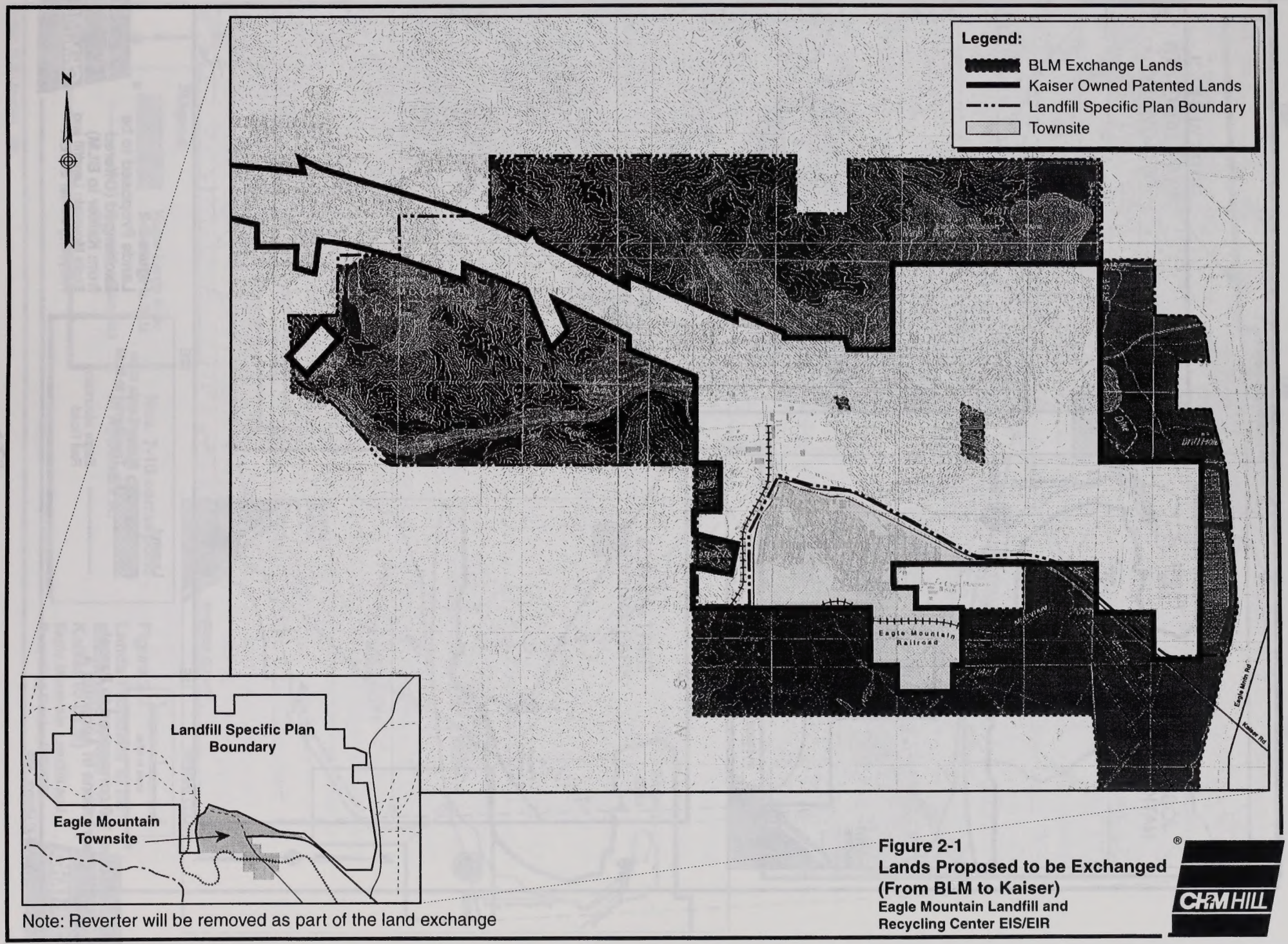
2.1.1.1 Selected Lands (Lands to be Transferred from Bureau of Land Management to Kaiser)

Under FLPMA, the BLM will transfer approximately 3,481 acres of publicly owned lands in the Eagle Mountains to Kaiser. These selected lands fall within Sections 25-28 and 33-38, Township 3 S, Range 14 E; Sections 30 and 31, Township 3 S, Range 15 E; Sections 1, 2, 11, and 12, Township 4 S, Range 14 E; and Sections 6 and 7, Township 4 S, Range 15 E, San Bernardino Meridian (SBM). These selected lands, which are shown in Figure 2-1, include unencumbered parcels, lands currently encumbered with a variety of unpatented mining and millsite claims held by Kaiser, or lands in which the BLM has a reversionary interest. These claims would be relinquished by Kaiser upon conveyance of the lands by the BLM.

A Mineral Potential Evaluation was prepared for the previously prepared EIS/EIR and has been reviewed by the BLM for this EIS/EIR. A determination was made that conditions have not changed in mineral markets or demands that would change the previous conclusion that some of the selected public lands are valuable for aggregate. The patent to Kaiser will be impressed with a mineral reservation for these lands.

2.1.1.2 Offered Lands (Lands to be Transferred to Bureau of Land Management by Kaiser)

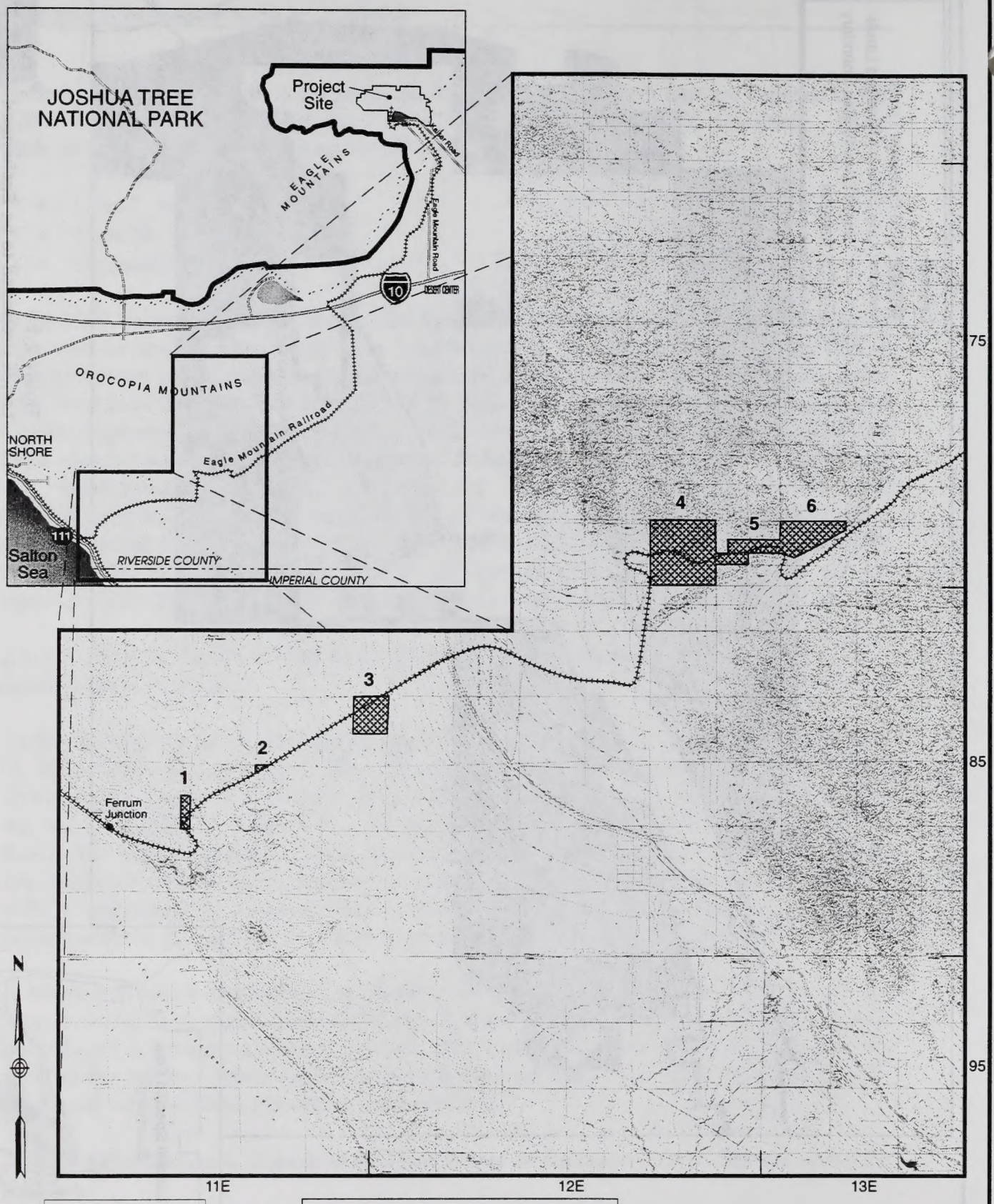
The Kaiser-owned lands proposed for transfer to federal ownership (for administration by the BLM) consist of approximately 2,486 acres of lands located along the Kaiser-owned Eagle Mountain Railroad as it traverses northeast from Ferrum Junction (on the northeast shore of



Note: Reverter will be removed as part of the land exchange

Figure 2-1
Lands Proposed to be Exchanged (From BLM to Kaiser)
Eagle Mountain Landfill and Recycling Center EIS/EIR

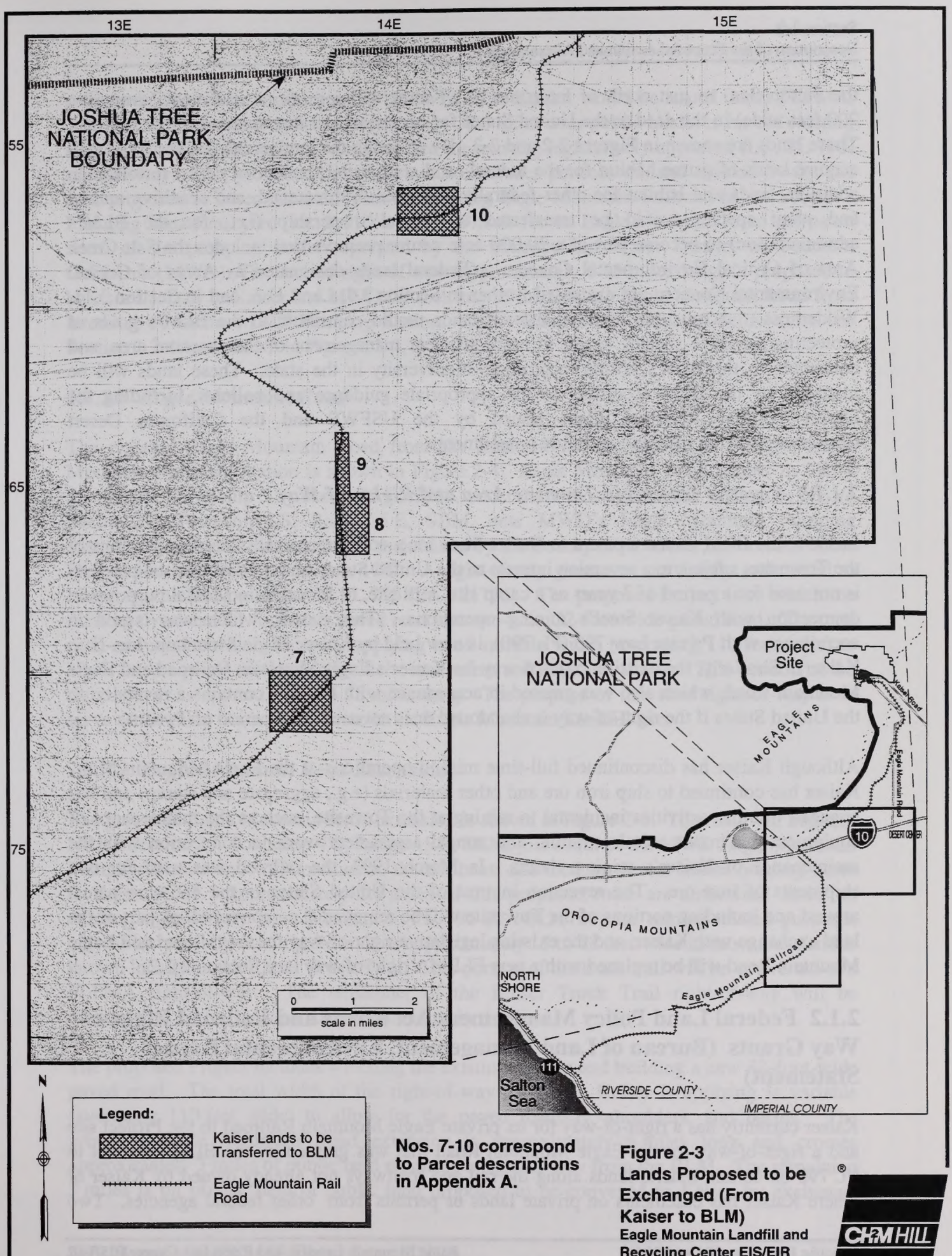
CH2M HILL



Nos. 1-6 correspond to Parcel descriptions in Appendix A.

Figure 2-2
Lands Proposed to be Exchanged (Offered from Kaiser to BLM)
Eagle Mountain Landfill and Recycling Center EIS/EIR

m115231.T6.20 LEovrvw 6/96



Nos. 7-10 correspond to Parcel descriptions in Appendix A.

Figure 2-3
Lands Proposed to be Exchanged (From Kaiser to BLM)
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 LEovrvw2 1/96

the Salton Sea) to just north of Interstate 10. Kaiser will reserve an easement (averaging 200 feet wide) in the deed to the United States for operation and maintenance of the railroad. These lands are shown in Figures 2-2 and 2-3. By effecting the land exchange, the BLM will acquire lands of prime habitat for the federal- and state-listed threatened desert tortoise. In addition, lands and habitat for other federally endangered, threatened, and sensitive animal and plant species would be transferred to federal ownership (i.e., for the BLM's administration) to become part of a 20,000-acre nature preserve that includes the Salt Creek Area of Critical Environmental Concern. (Federal lands designated as Areas of Critical Environmental Concern are discussed further in Section 3.5, Land Use, and in Section 3.11, Wilderness.) Acquisition of these offered lands would contribute to the BLM's goals of protecting sensitive species, result in more efficient management of the preserve area, and contribute to the BLM's efforts to promote biodiversity in the state. These lands will be managed by the BLM according to the appropriate guidance and policies, including the Desert Tortoise Recovery Plans issued by the USFWS and the California Desert Conservation Area Plan and its future amendments.

2.1.1.3 Reverter Interest in Townsite Area and Rights-of-Way

In 1955, the BLM issued a patent to Kaiser Steel for a 465-acre parcel, including portions of the Townsite, subject to a reversion interest to the United States in the event that the property is not used for a period of 7 years as a camp site, mill site, or for other incidental purposes in connection with Kaiser Steel's mining operations. This patent, which was issued in accordance with Private Law 790 (PL 790), is now held by Kaiser Eagle Mountain, Inc. (i.e., Kaiser). Similarly, the existing right-of-way for Kaiser's Eagle Mountain Railroad and Eagle Mountain Road, which also was granted in accordance with PL 790, contains a reversion to the United States if the right-of-way is abandoned or is not used for a period of 7 years.

Although Kaiser has discontinued full-time mining operations at the Eagle Mountain Mine, Kaiser has continued to ship iron ore and other materials (e.g., aggregate and riprap) and has engaged in other activities incidental to mining at the Townsite, such as the maintenance of equipment and roads, administration, and annual assessment work in connection with the maintenance of Kaiser's mining claims. In March 1993, the railroad was used for two shipments of iron ore. The reversion interest of the United States in the 465-acre parcel around and including portions of the Townsite will be removed (i.e., conveyed) as part of the land exchange with Kaiser, and the existing legislative right-of-way for the railroad and Eagle Mountain Road will be replaced with a new FLPMA right-of-way (see Section 2.1.2).

2.1.2 Federal Land Policy Management Act Roads and Railroad Right-of-Way Grants (Bureau of Land Management, Environmental Impact Statement)

Kaiser currently has a right-of-way for its private Eagle Mountain Railroad to the Project site and a right-of-way for the Eagle Mountain Road that was granted by the BLM pursuant to PL 790 on certain federal lands along the rail and roadways not already owned by Kaiser or where Kaiser has easements on private lands or permits from other federal agencies. Two

proposed rights-of-way to be granted by the BLM to Kaiser, would be issued under FLPMA. The first right-of-way (totaling approximately 28.6 miles over public lands) is for the existing Eagle Mountain Railroad that would replace the existing legislatively approved (i.e., PL 790) right-of-way. This proposed right-of-way also includes portions of land crossed by the rail spur proposed to be constructed from the existing Eagle Mountain Railroad to the Project's Planning Area 3 rail yard (i.e., Rail Yard II) and lands for the Eagle Mountain Road extension north of the pumping station operated by the Metropolitan Water District of Southern California (MWD) The second right-of-way (approximately 6.75 miles long) is proposed to be issued jointly to Kaiser and MWD for their use of the existing Eagle Mountain Road from Interstate 10 to the MWD Pumping Station. These features are discussed below (also see Section 1.2.4) and shown in Figures 2-4, 2-5, and 2-6.

2.1.2.1 Eagle Mountain Road

The existing Eagle Mountain Road from the Interstate 10 interchange to MWD's Eagle Mountain Pumping Station is shown in Figure 2-4. Eagle Mountain Road begins in SE1/4 Section 30, Township 5 S, Range 15 E, SBM, and runs almost due north ending in NE1/4 Section 19, Township 4 S, Range 15 E, SBM, near MWD's Eagle Mountain Pumping Station. The paved road is currently maintained by the County of Riverside, authorized under Federal Revised Statutes, Section 2477. A right-of-way grant was previously authorized to Kaiser by the BLM pursuant to PL 790 (LA-121701). The proposed Project is to widen the existing two-lane, 20-foot-wide paved road to a two-lane, 32-foot-wide paved road. The total right-of-way for which Kaiser is applying is of variable width (averaging 110 feet wide) to allow for the paved roadway, shoulders, and berms and drainage ditches. This portion of the right-of-way is approximately 6.75 miles long. The purpose of this road right-of-way is to serve as the main truck access route to the Eagle Mountain Landfill site.

2.1.2.2 Eagle Mountain Road Extension

The proposed Eagle Mountain Road extension is shown in Figure 2-5. The road will begin in NE1/4 Section 30, Township 4 S, Range 15 E, SBM, just south of the MWD Eagle Mountain Pumping Station and will continue to the northeast and then northwest before heading north to Kaiser Road. Approximately 1.5 miles of this proposed route are authorized under an existing right-of-way grant pursuant to PL 790 (LA-0121701) for mining-related purposes only. This partially existing dirt road is approximately 15 to 18 feet wide in most areas and is known locally as the Kaiser Truck Trail. This portion of the truck trail will be converted to a FLPMA right-of-way. The remainder of the Kaiser Truck Trail right-of-way will be relinquished by Kaiser, and Kaiser will maintain this road.

The proposed Project includes widening the existing portion and building a new 32-foot-wide paved road. The total width of the right-of-way for which Kaiser is applying is variable (averaging 110 feet wide) to allow for the paved roadway, shoulders, and berms. The proposed Eagle Mountain Road extension is approximately 6 miles long and crosses approximately 3 miles of public land requiring a right-of-way from the BLM. The remaining 3 miles is on private land or public land proposed to be conveyed to Kaiser by exchange.

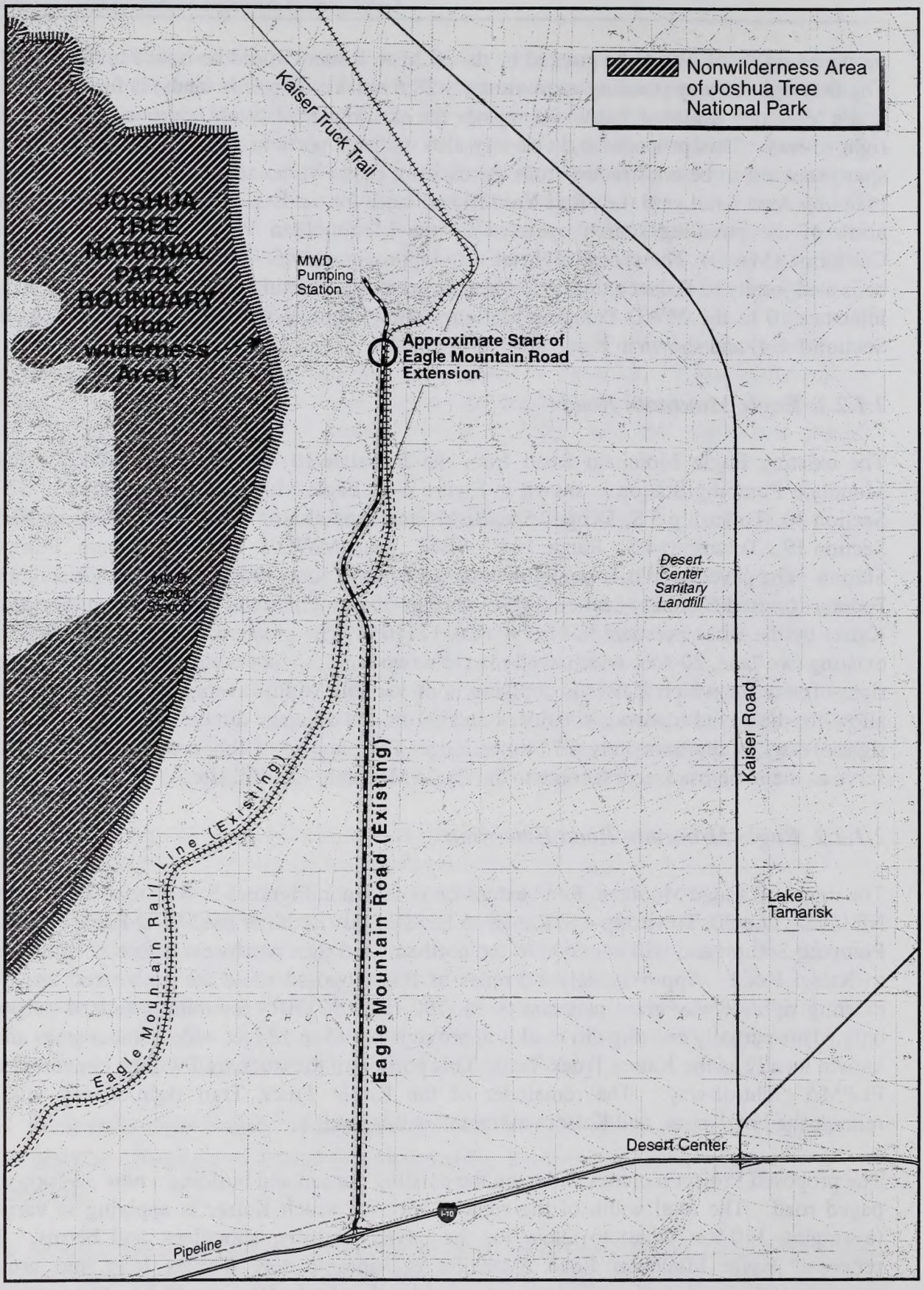


Figure 2-4
Existing Eagle Mountain Road Alignment
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2MHILL

m115231.T6.20 EMRD 6/96

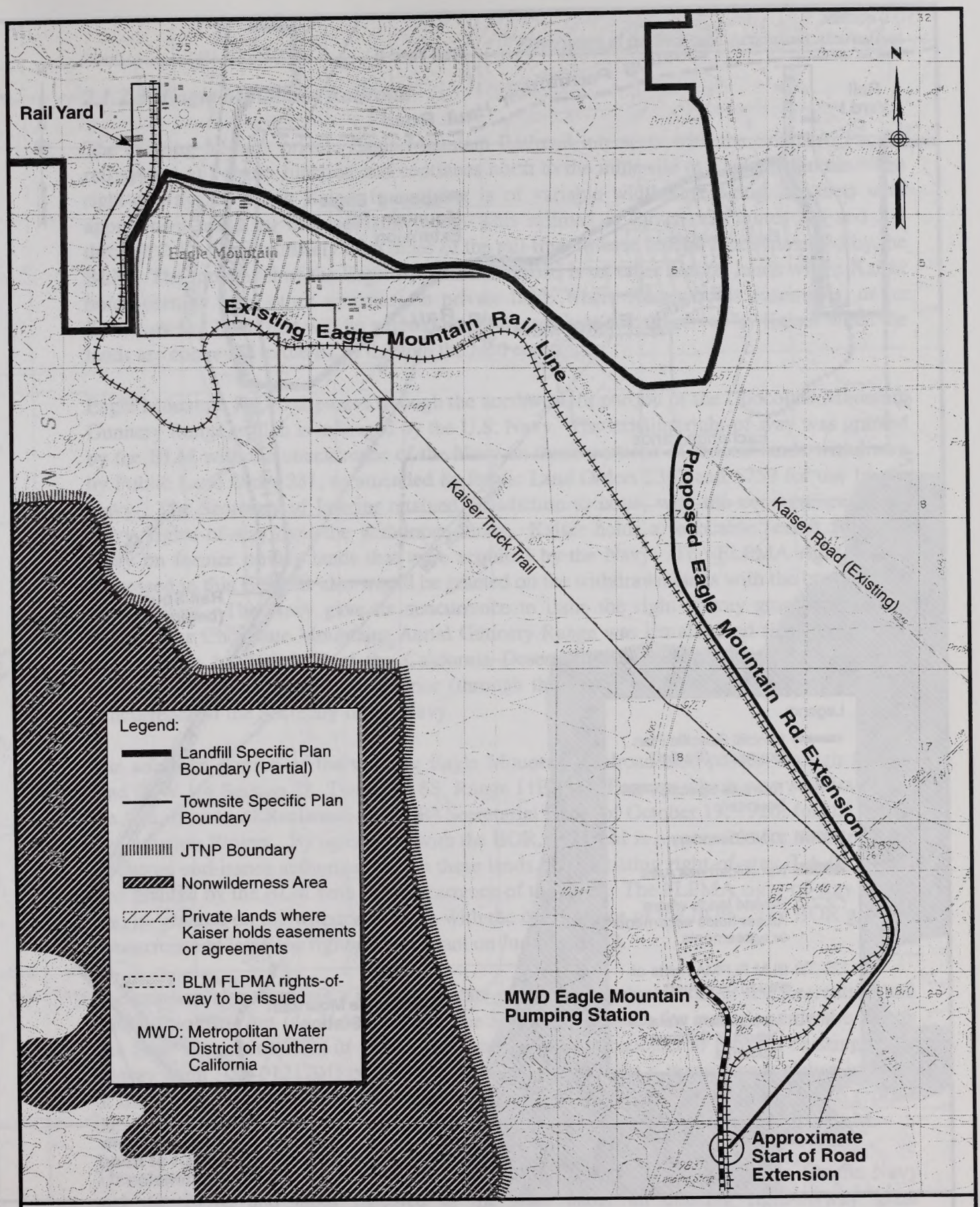


Figure 2-5
Eagle Mountain Road Extension and Railroad Right-of-Way (Rail Yard I)
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2MHILL

m115231.T6.20 RRRoW 6/96

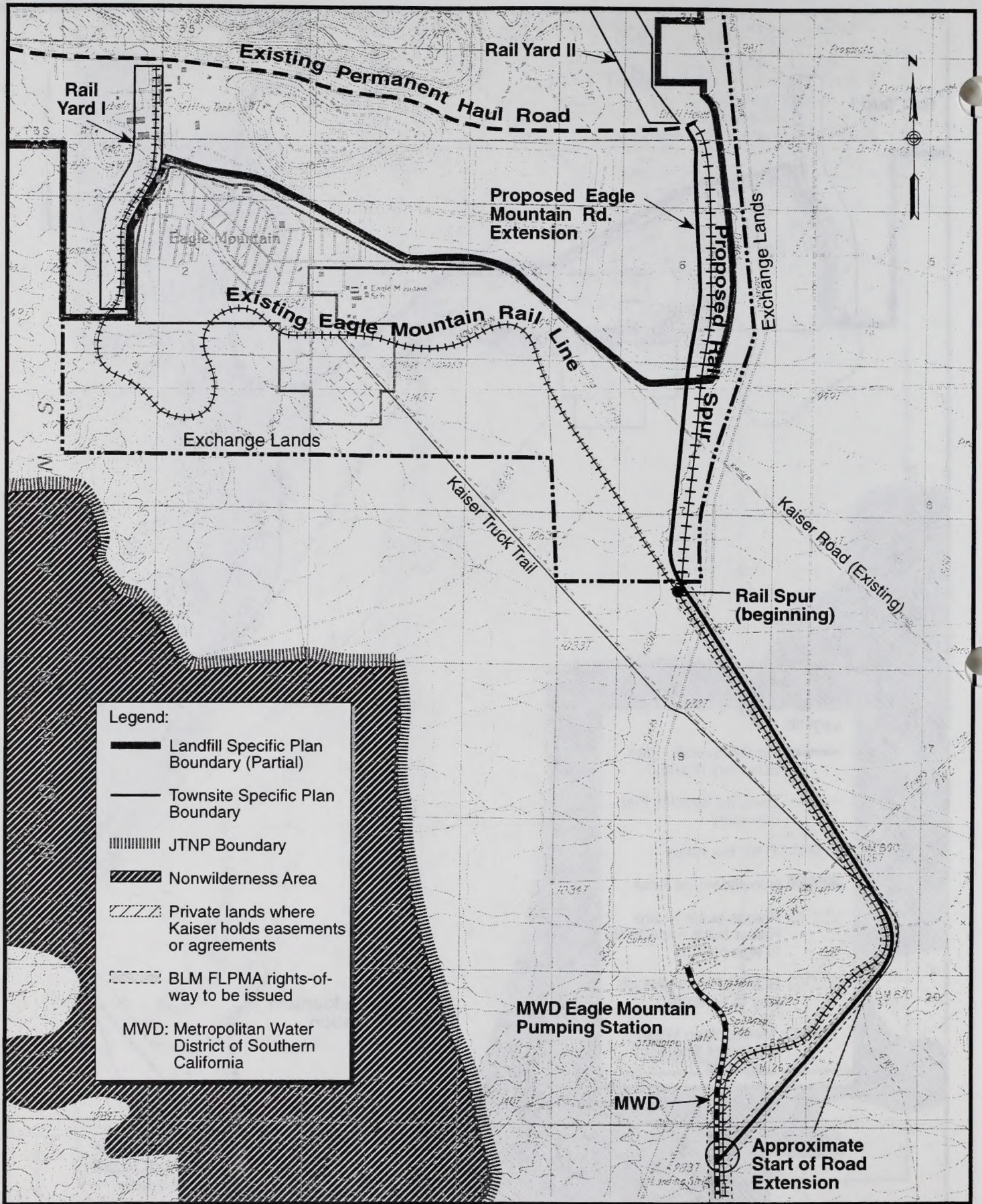


Figure 2-6
Road and Rail Features of Eagle Mountain Road Extension (Rail Yard II)
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 RRRoW2 6/96

2.1.2.3 Eagle Mountain Railroad

The existing 52-mile private Eagle Mountain Railroad intersects with the Southern Pacific rail system at Ferrum Junction and continues north to the mine site at Eagle Mountain. The right-of-way for which Kaiser is applying is of variable width (averaging 200 feet) with appurtenant areas for drainage structures. This railroad is shown in Figures 1-1 and 2-2 through 2-5. Approximately 28.6 miles of the rail line traverse federal lands managed by the BLM. The remainder of the Eagle Mountain Railroad is on other federal lands where Kaiser holds permits from other agencies, on private lands where Kaiser holds easements, or on Kaiser-owned lands that will be made subject to easements to be reserved by Kaiser when the lands are conveyed to the BLM through the land exchange.

Eagle Mountain Railroad passes through the northwestern portion of the Chocolate Mountain Gunnery Range, which is managed by the U.S. Navy. The existing right-of-way was granted by the BLM with the concurrence of the Navy on those portions of federal lands withdrawn by Public Land Order 281, as amended by Public Land Orders 2312 and 5759 for use by the Navy. The Secretary of Interior retained jurisdiction to issue, with the concurrence of the Navy, rights-of-way over the withdrawn lands. Kaiser holds a revocable permit from the Navy on former private lands that were acquired by the Navy. The FLPMA right-of-way addressed in this EIS/EIR also would be granted on the withdrawn lands with the concurrence of the Navy. The Navy gave its concurrence to issue the right-of-way grant (October 7, 1993). The Chocolate Mountains Aerial Gunnery Range was reauthorized (i.e., withdrawn) by Congress by Title VIII of the California Desert Protection Act. Section 805(a)(3)(B) authorizes the Secretary of the Interior (through the BLM) to issue rights-of-way with the concurrence of the Secretary of the Navy.

The southern portion of the existing Eagle Mountain Railroad also passes through federal land (NW 1/4 Section 28, Township 8S, Range 11E) near Ferrum, which was withdrawn for the U.S. Bureau of Reclamation (BOR) Secretarial Order of October 19, 1920, for the Yuma Reclamation Project. By agreement with the BOR, the BLM is responsible for managing the resources and issues authorizations on these lands. The existing right-of-way (LA-0121701) was granted by the BLM with the concurrence of the BOR. The FLPMA right-of-way would also be granted on the withdrawn lands with the concurrence of the BOR. The BOR gave its concurrence to issue the right-of-way grant on June 11, 1993.

The rail line also traverses a portion of state-owned land patented under the Recreation and Public Purposes Act (43 U.S.C. 869) to the State of California for inclusion into the Salton Sea State Recreation Area in 1971. The patent was issued subject to Kaiser's existing right-of-way grant (LA-0121701) pursuant to PL 790, and contains a reversionary clause in favor of the United States if the lands are not used as a recreation area. Kaiser intends to replace the right-of-way with an easement granted by the state, with the concurrence of the BLM.

The railroad is authorized over BLM-managed public lands, lands withdrawn for the Navy and the BOR, and lands patented to the state under an existing right-of-way grant (LA-0121701) pursuant to PL 790 for mining-related activities. This right-of-way will be

converted to a FLPMA right-of-way. The granting of this right-of-way over public land would allow the use of the Eagle Mountain Railroad to carry trains for purposes other than mining (e.g., transport of refuse containers from the Southern Pacific line at Ferrum Junction to the proposed Rail Yard I and/or repair and maintenance facility [see Section 2.1.7.1]). At the beginning of landfill operations, no more than three trains per day would use this route to Rail Yard I (see Figure 2-5). As the landfill is developed (i.e., when the daily disposal capacity at the landfill site exceeds 10,000 tons per day), trains entering the landfill site will be routed east of the Eagle Mountain Townsite (see Section 2.1.3) into the proposed Rail Yard II (see Figure 2-6) via a railroad spur (see Section 2.1.2.4). Use of Rail Yard II would allow some or all of the rail traffic to be routed further from the Townsite. Rail Yards I and II can be used simultaneously to accommodate a total of up to six trains per day.

2.1.2.4 Eagle Mountain Railroad Spur

The proposed new railroad spur, which is shown in Figure 2-6, will begin just past the location where the existing railroad crosses the Colorado River Aqueduct in S1/2 Section 7, Township 4 S, Range 15 E, SBM, and extends to the north to the proposed Rail Yard II in Planning Area 3 in W1/2 Section 31, Township 3 S, Range 15 E, SBM. The rail spur will be approximately 2 miles long and is almost entirely on land proposed to be conveyed to Kaiser as part of the land exchange. The purpose of this spur is to route rail traffic east of the Townsite into the larger proposed Rail Yard II when daily waste disposal capacity exceeds 10,000 tons per day.

2.1.3 County Land Use Approvals (County of Riverside, Environmental Impact Report)

The proposed Project will require local land use approvals from the County before it can proceed. The County serves as lead agency, and the County of Riverside Board of Supervisors will consider certification of the EIR and approvals for the Landfill Specific Plan No. 305, General Plan Amendment No. 402, Change of Zone No. 6249, a Revised Permit No. 158 to Reclamation Plan No. 107, and Development Agreement No. 64 with Mine Reclamation Corporation. The County will also consider approval of the Townsite Specific Plan No. 306, General Plan Amendment No. 405, Change of Zone No. 6253, and Tentative Tract Map No. 28217 submitted by Kaiser.

The following text presents a general description of the key land use documents reviewed by the County for this proposed action.

A local general plan is a city or county's basic planning document for future development. It represents a community's view of its future; a "constitution" made up of the goals and policies upon which a city council, board of supervisors, or planning commission base their land use decisions. A general plan addresses all aspects of development including, housing, traffic, open space, safety, land uses, and public facilities. A specific plan implements the general plan by assessing land use distribution, open space availability, infrastructure, and infrastructure financing for a specific portion of the community.

Local zoning codes regulate the use and development of property. A zoning ordinance divides a city or county into land use districts or "zones," illustrated on zoning maps, and specifies the allowable uses within each zone. It establishes development standards such as minimum lot size, maximum structure height, building setbacks, and yard size. A development agreement is a negotiated contract between a developer and a city or county establishing the conditions under which a particular development can occur. The local government "freezes" the regulations applicable to the site for an agreed upon period of time. A tentative map is a map or drawing illustrating a subdivision proposal. A city or county will conditionally approve or deny the proposed subdivision, based on design depicted on the tentative map.

2.1.3.1 Specific Plan for the Townsite

A Specific Plan for the Townsite identifies the existing residential/commercial and circulation patterns and provides planning standards consistent with the infrastructure already located within the Townsite area. The Specific Plan for the Townsite provides for improvements to the currently unoccupied housing stock similar to the improvements made by Kaiser to the existing occupied homes. Where possible, and if required to meet housing demands, vacant pads and existing foundations located within the Townsite will be infilled with equivalent housing. Planning standards will reflect and conform to existing development. The Specific Plan states that Kaiser maintains ownership of the Townsite and is responsible for numerous public improvements.

The San Diego Superior Court ruled that the new EIR should include the Townsite in the Project description and analyze the environmental impacts of the proposed landfill project in conjunction with environmental impacts resulting from renovation of the Townsite caused by the landfill. The proposed Townsite Specific Plan No. 306 and associated General Plan Amendment No. 405, Change of Zone No. 6253, and Tentative Tract Map No. 28217 will provide for the renovation of the existing developed area of the Townsite and the repopulation that could result from development of the landfill. The existing Townsite and its historical use, including existing structures and activities, are discussed throughout this EIS/EIR. It is also discussed in detail in Section 1.1.3 and Section 3.5. There is no anticipated expansion of the existing Townsite acreage (429 acres) because renovation of the existing acreage would provide adequate housing and services to support the combined operations of the Eagle Mountain Landfill, the community correctional facility, Kaiser administrative offices, and other nonresidential development.

2.1.3.2 Townsite Planning Areas

The legal description of the Townsite is in Appendix B of this EIS/EIR. The Townsite Specific Plan comprises 12 planning areas, totaling 429 acres, which are discussed below and shown in Figure 2-7.

Townsite Planning Area No. 1. This area is approximately 13 acres and contains the Eagle Mountain Correctional Facility (a privately operated, government correctional facility) operated by Management and Training Corporation (MTC) under Public Use Permit No. 585, Revised Permit #2, on property leased from Kaiser. If the operation of the MTC facility ceases, future uses of this area will be consistent with commercial/manufacturing uses that could be permitted on the basis of the commercial/manufacturing designations discussed in the Specific Plan for the Townsite.

Townsite Planning Area No. 2. This area is approximately 13 acres and currently contains Kaiser's Administrative Office, a commercial building (existing laundromat), a fire station, and one vacant structure. This area will also be designated for commercial/manufacturing uses (such as small groceries or neighborhood mailboxes), and will include landscaped parkways.

Townsite Planning Area No. 3. This area comprises approximately 28 acres. It was previously the site of a Recreational Vehicle/Mobile Home Park. This area will be designated as an outdoor storage area.

Townsite Planning Area No. 4. This area is approximately 9 acres and will be designated for commercial/manufacturing uses consistent with future uses of this area.

Townsite Planning Area No. 5. This area is approximately 8 acres and contains a large community building. Provision will be made for the use of this building and the remaining portion of the planning area as commercial/manufacturing land uses.

Townsite Planning Area No. 6. This area is approximately 5 acres and currently contains two single-family residences and 13 residential pads/foundations. This will result in 15 single-family dwellings at a density of 2.2 dwelling units per acre. If housing demand exceeds available units, provision will be made for the option of developing this area with approximately 37 multiple-dwelling units at a density of 8 dwelling units per acre. If this area is developed with multiple-dwelling units, the two existing single-family residences will be relocated to vacant pads/foundations within either Planning Area No. 9 or No. 10.

Townsite Planning Area No. 7. This area is approximately 4 acres and is currently occupied by a community/church building. Provision will be made for this structure and site to be used as a community park and recreation facility with shared religious services in the community building.

Townsite Planning Area No. 8. This area is approximately 11 acres. Provision will be made for commercial uses and landscaped parkways within this planning area. Approximately 4.7 acres in this planning area will be available for commercial development; that portion of the site is currently zoned C-1/C-P.

Townsite Planning Area No. 9. This area is approximately 29 acres and currently contains 29 existing and seven partial dwelling units, and a community garden park. In addition, there

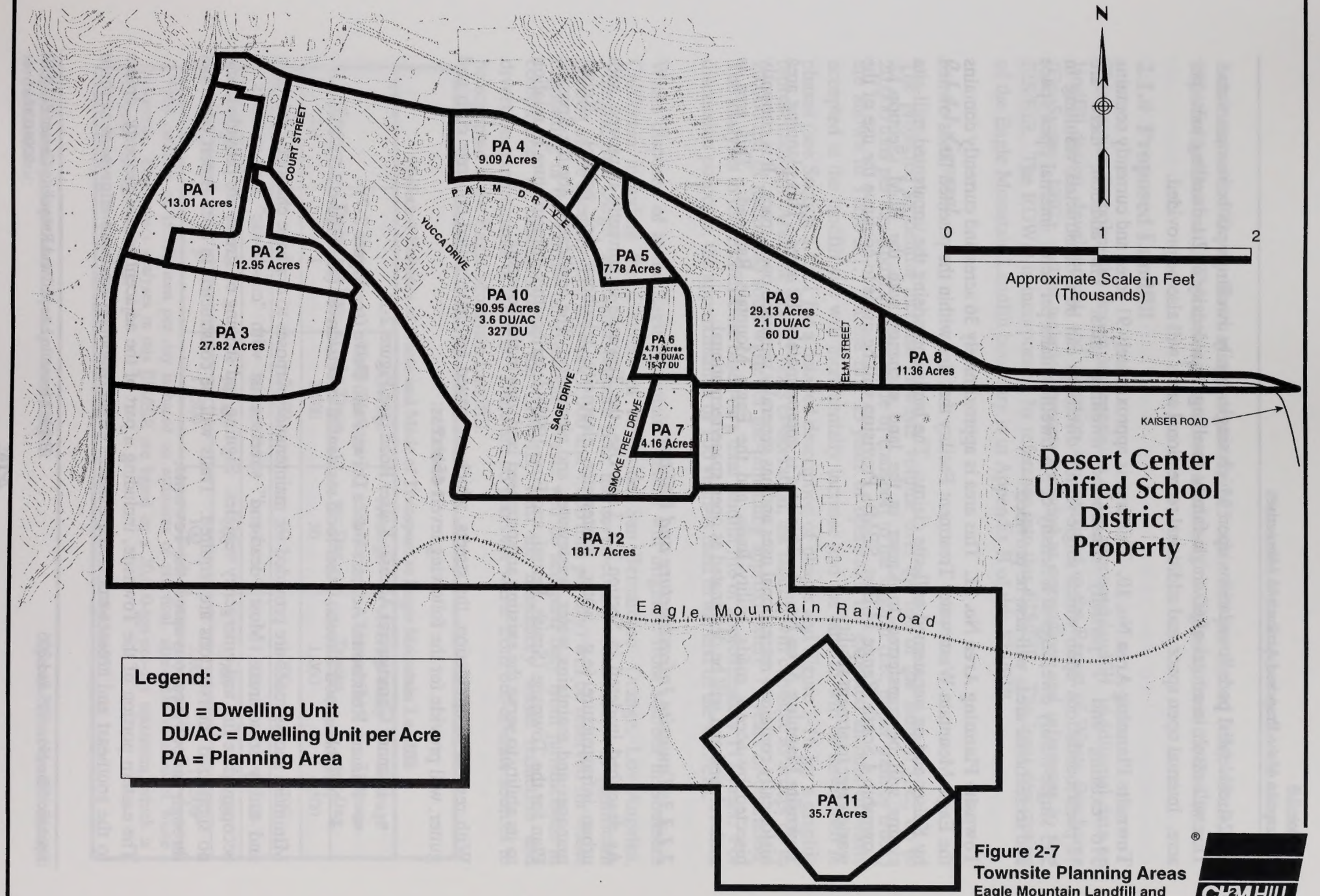


Figure 2-7
Townsite Planning Areas
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

are 24 residential pads/foundations upon which single-family dwellings can be reconstructed. This will result in a total of 60 single-family dwellings at a density of 2.1 dwelling units per acre. Internal open space and additional recreational areas will also be provided.

Townsite Planning Area No. 10. This area is approximately 91 acres and currently contains 316 existing and 7 partially constructed dwelling units. In addition, there are 12 pads/foundations upon which single-family dwellings can be reconstructed, resulting in 335 single-family dwellings at a density of 3.6 dwelling units per acre. Internal open space and recreational areas will also be provided.

Townsite Planning Area No. 11. This area is approximately 36 acres and currently contains the Eagle Mountain Wastewater Treatment Facility that lies within the patented lands owned by Kaiser and on unpatented mill-site claims. The lands comprising the unpatented mill-site claims will be transferred to Kaiser in the land exchange with the BLM (Section 12, Township 4 South, Range 14 East, SBM). Provision will be made to continue the use of the wastewater treatment facility.

Townsite Planning Area No. 12. This area is approximately 182 acres. This planning area historically contained recreational uses and has generally remained open space. It is currently bisected by access roads, utility lines, and the Eagle Mountain Railroad. This area is undeveloped and will be designated as open space/recreational.

2.1.3.3 Townsite Infrastructure and Utilities

As described in detail in Section 3.5, Land Use, the Townsite is currently improved with urban infrastructure (e.g., water, wastewater, electricity, telephone, fire, police). Kaiser manages and maintains water, wastewater, and electricity. The application for the Specific Plan for the Townsite (Smith, Peroni, and Fox; 1995) describes this infrastructure in relation to its ability to serve the existing and proposed land uses in the Townsite.

With respect to circulation, the streets, which are paved and have rolled concrete curb and gutter, will provide for the following levels of access:

- Primary Commercial Access: Kaiser Road (see Figure 2-5)
- Primary Residential Access: Yucca Drive, Palm Drive (see Figure 2-7)
- Neighborhood Streets: Other local residential streets/drives (see Figure 2-7)

Minimum access roads are provided for maintenance purposes to drainage channels, culverts, and utility structures. Most "dead-end" streets exist with "cul-de-sac" turn-arounds to accommodate fire and emergency vehicles. Signing and striping of streets are provided, and no signalized intersections are required. Trails will be constructed in open-desert corridors through various locations across the Townsite.

The eastern portion of the Townsite, including a part of the adjacent school property, drains to the southeast and crosses under the existing Eagle Mountain Railroad alignment at three

locations, with 100-year flows at approximately 125 cubic feet per second (cfs), 40 cfs, and 180 cfs (furthest east). This drainage continues southeast flowing away from the Townsite.

2.1.4 Proposed Landfill

This section describes the design and operation of the proposed landfill. Additional data on landfill design, development, and operation are contained in the Report of Waste Discharge (GeoSyntec, 1992), and in technical reports included as appendices and references to this EIS/EIR. The ROWD is incorporated by reference into this EIS/EIR. The legal description of the Eagle Mountain Landfill boundary is in Appendix B of this EIS/EIR.

2.1.4.1 General

The projected sequential increase in waste volume over the life of the landfill (i.e., up to 20,000 tons per day [tpd]) and the mode of transport to the landfill (i.e., either train or truck) are shown in Table 2-1. For the first 25 years of operation, the expected amount of waste accepted at the landfill site will incrementally increase and the landfill will be developed in phases (see Section 2.1.6.1 for a detailed description of phases and Figure 2-16 for a graphic representation). After the first 25 years of operation, the landfill will continue to accept up to 20,000 tpd of municipal solid waste for the remaining approximately 75 years of operation. The analyses in this EIS/EIR are based on a total landfill life of approximately 117 years. For discussion purposes, the approximation of 100 years is used in the text of the EIS/EIR.

Waste disposed of at the Eagle Mountain Landfill will originate from sources in Southern California including the Counties of Riverside, San Bernardino, Orange, Los Angeles, Ventura, San Diego, and Santa Barbara (i.e., the seven-county wasteshed). A significant portion of the capacity (i.e., between 2,000 and 4,000 tons per day) will be reserved for waste originating in the County of Riverside. Waste will be accepted only from jurisdictions in compliance, as determined by the CIWMB, with the mandatory waste reduction and diversion requirements of AB 939. There are no plans for waste from out-of-state sources to be accepted at the Eagle Mountain Landfill.

Table 2-1

Projected Volumes of Waste and Mode of Transport to Eagle Mountain Landfill

Years	Average Trains per Day	Average Daily Tonnage by Train	Average Trucks per Day	Average Daily Tonnage by Trucks	Average Tonnage per Day
1-4	1	3,500	50	1,000	4,500
5-9	2	7,000	60	1,200	8,200
10-14	3	10,500	80	1,600	12,100
15-24	4	14,000	100	2,000	16,000
25+	5**	17,500	100	2,000	19,500*

*The estimate of 19,500 tons per day is based on estimates of practical, attainable volumes of waste disposal. The impact analyses in this EIS/EIR are based on a 20,000-ton-per-day maximum, which is assumed to occur at Year 25.

**An average of five trains per day is proposed for transporting waste to the landfill.

For the first 3 years of operation, waste could be transported to the landfill site by either truck or train from any of the jurisdictions in the seven-county wasteshed. After 3 years, waste from areas outside the desert areas of the County would be transported only by train. Each train is anticipated to haul an average net load of 3,500 tons per day. At full operation (i.e., estimated to be 25 years after startup), an average of five trains per day is planned to transport waste to the landfill. Waste originating within the Chuckwalla Valley could be transported in commercial garbage trucks or private cars and trucks, and waste originating from the Blythe area could be transported in commercial garbage trucks. A limit of 100 transfer truck round trips per day will be accepted at the site for the life of the Project.

Local area waste will be delivered to a local waste-receiving facility at the Eagle Mountain Landfill by garbage trucks or private trucks and cars. This waste will be unloaded, inspected and, where appropriate, recyclables or noncomplying waste will be removed. The percent of recyclables in the waste will be contingent on the type of waste received at the landfill. The waste will then be loaded into a roll-off or transfer container and transported to the landfill working face for disposal. Recyclables will be temporarily stored at the local waste-receiving facility prior to shipment by truck or train to facilities handling large volumes of recyclables. Landfill operations are discussed in detail in Section 2.1.7.

2.1.4.2 Waste Transfer

Although the Eagle Mountain Landfill is primarily a waste-by-rail facility, waste will also arrive at the landfill site via transfer truck. For both forms of transport, the waste will be transported to the site in enclosed containers. Waste arriving by train will be transported in standard shipping containers that range from 20 to 53 feet in length. Waste arriving by transfer truck will be transported in enclosed trailers that average 20 net tons of waste and are 40 to 48 feet in length. Waste will be top- or end-loaded into these enclosed containers or trailers.

Transport by train will require the use of transfer facilities where waste can be unloaded from collection vehicles and reloaded into containers for transport to Eagle Mountain Landfill. There are more than 25 existing materials recovery facilities (MRFs) or transfer stations (TSs) within the seven-county wasteshed area that individually process more than 100 tons of waste per day. Many additional facilities are being planned by various cities, counties, and waste haulers in Southern California. The City of Indio is considering a proposal from a private developer for developing and operating a transfer station in Indio. The proposed facility would accept municipal solid waste from eastern Coachella Valley cities. Workers at the proposed facility would remove 5 to 15 percent of the waste for recycling before loading into transfer trailers for shipment to a Riverside County landfill. The intent of these facilities is to reduce the cost of hauling and to maximize the recovery of recyclable materials to comply with AB 939 requirements.

All waste that arrives at the site, other than waste from the Chuckwalla Valley, will be accepted only after processing at properly permitted MRFs or TSs. Many of the MRFs and TSs are currently in place (see Table 1-2) or have been approved by the responsible government agencies and are likely to be built regardless of the status of the Eagle Mountain Project. Although these MRFs and TSs are not part of the proposed Project, they are discussed in this EIS/EIR to provide context for the general nonhazardous, solid waste management process, which is pertinent to regional rail haul landfills, including other potential landfills as well as the proposed Eagle Mountain Landfill (see Section 1.2.1). MRFs/TSs are important elements of local communities' ability to comply with the waste reduction and diversion provisions of AB 939.

The design and operation of these facilities vary significantly from facility to facility but generally consist of two types: (1) facilities that are used primarily to transfer waste directly from local garbage trucks and private vehicles to larger capacity transfer trucks (i.e., TSs) and (2) facilities that process the waste before transferring it to transfer vehicles to maximize the recovery of materials (i.e., MRFs). A general description of these two types of facilities is presented below.

Transfer Stations. At TSs, commercial and private local-haul vehicles bring waste through a scale house where it is weighed and then directed by a traffic controller to specific places in the facility where the waste is unloaded on a tipping floor. If either the scale attendant or traffic controller identifies materials that are inappropriate for disposal at a Class III landfill, the noncomplying materials in the load are removed for recycling or proper disposal at an offsite facility. The waste is then loaded into transfer trucks with a capacity of 18 to 22 net tons.

At most TSs, manual sorting is done to recover bulky items, large pieces of cardboard, and other easily retrievable recyclables. The amount of waste that is salvaged, however, is usually less than 10 percent of the total waste received. Because of the small amount of waste recovered, cities that deliver waste to transfer stations typically require some sort of curbside recycling program for source separating and collecting of recyclables and yard debris to be in compliance with AB 939.

Materials Recovery Facilities. There are two types of MRFs. The first type, often referred to as a "clean" MRF, accepts only source-separated recyclable materials (e.g., curbside recycling). Loads that contain nonrecyclable material are rejected. At these facilities, recyclables are sorted by manual and/or mechanical means into various classes of paper, plastics, glass, and metals. Paper, plastics, and metal are baled and shipped to processors for recycling. Glass is directly hauled out in bins. Because the majority of the materials delivered to clean MRFs are recycled, materials delivered to these types of facilities would not be hauled to the Eagle Mountain Landfill or to any other landfill.

The second type of MRF, sometimes referred to as a Mixed Waste Processing Facility or "dirty" MRF, accepts commingled recyclable and nonrecyclable materials. At these facilities, commercial trucks pass through a scale house where the truck is weighed and then directed

by a traffic controller to a space to unload. Large bulky items are removed, plastic trash bags are broken, and the waste is pushed onto a conveyor and transported to elevated sorting lines. Recyclable materials are usually sorted by a combination of mechanical and manual processes and dropped into bins below. Paper, plastic, and metal are conveyed to a baler for baling and then shipped to processors for recycling. Glass is directly hauled out in the bins. Some of the more sophisticated facilities use various mechanical methods to help in the sorting, including screening, magnetic separators, and air clarifiers. Nonrecyclable waste is conveyed to a compaction pit where it is then loaded onto transfer trucks or into containers and taken to a disposal facility. During this process, if either the scale attendant/traffic controller identifies materials that cannot be disposed of at a Class III landfill, the load is rejected. Sorters are required to remove any material from the sorting line that cannot be disposed of at a Class III landfill.

Some of the more modern MRFs have or are planning additional ancillary facilities to ensure that cities using these facilities will meet the requirements of AB 939. These ancillary facilities include:

- The separation and grinding of yard waste for composting either at the site or at a separate composting facility at another site
- The sorting of construction and demolition debris for recovery and recycling of inerts (concrete, asphalt, dirt), bulk metal, and wood
- A separate tipping and processing area for curbside and other source-separated recyclables
- A recycling center to buy recyclable materials from the public
- A household hazardous waste collection facility

Although none of the existing MRFs or TSs that process mixed solid waste currently transfer waste by rail, most can be converted to accommodate this type of operation. Most facilities are located in areas zoned for heavy industrial use and are in proximity to existing rail lines or could have access to existing rail lines by constructing new rail sidings. At these facilities, waste would be top- or end-loaded into enclosed shipping containers and then loaded onto railcars for transport to the Eagle Mountain Landfill. For MRFs that cannot be directly accessed by rail, the containers could be transported by transfer trucks to a rail transfer facility, although this would increase cost due to double handling of the containers.

2.1.4.3 Haul Routes

Waste delivered by transfer truck will use Eagle Mountain Road, which intersects with Interstate 10 and a short portion of Kaiser Road (see Figures 2-4 and 2-6). Waste delivered by train will use the Southern Pacific Transportation Corridor's (SPTC) rail system through the Coachella Valley and the private Eagle Mountain Railroad from Ferrum Junction to the

Project site. Trains can also use other railroads in Southern California to link with the SPTC rail system. Waste transfer by train will be scheduled to the extent possible to move through the Coachella Valley and Banning-Beaumont Pass areas primarily during nonpeak vehicular traffic times. Waste handling within the landfill site is discussed in Section 2.1.7.

2.1.4.4 Landfill Planning Areas

The Eagle Mountain Landfill is divided into the following six planning areas, which are discussed below and shown in Figure 2-8 as overlays of the landfill footprint. Additional discussion of facilities development and operational features of the Eagle Mountain Landfill is contained in Sections 2.1.6 and 2.1.7. All planning areas include one or more environmental monitoring systems.

Landfill Planning Area No. 1. This area defines the footprint of the landfill and comprises approximately 2,164 acres. This footprint area will be developed in five distinct phases (phasing of landfill construction is discussed in Section 2.1.6.1). In addition to landfilling, this area will contain permanent or temporary haul roads, monitoring systems, and landfill gas flaring equipment. Rock crushing and screening, cover and liner material processing, waste inspection, and general equipment maintenance will also take place in this area.

Landfill Planning Area No. 2. This area will contain the Rail Yard I and initial truck marshaling yard in approximately 235 acres. This area is shown in Figure 2-5. The existing warehouse and maintenance buildings will be renovated for use as the landfill administration area and maintenance of landfill, rail, and truck equipment. Land uses also include the main site entrance, vehicular weigh station, local waste receiving center, temporary storage (i.e., less than 90 days) of recyclables and hazardous waste, monitoring systems, vehicular and train fueling, drainage structures, and gas flare equipment. Many of the existing roads will be improved, and new roads will be constructed in this planning area.

Landfill Planning Area No. 3. This area is approximately 461 acres and will contain the Rail Yard II and future truck marshaling yard facilities (see Figure 2-6) for unloading trains and receiving trucks when the waste received exceeds 10,000 tpd. When later constructed, land uses will include a site entrance, vehicular weigh station, local waste receiving center, temporary storage of recyclables and hazardous waste, monitoring systems, gas flares, and drainage structures. Roads will be built in this planning area to handle the anticipated traffic circulation.

Landfill Planning Area No. 4. This area of approximately 146 acres will be used for transportation of waste via a proposed new road and rail spur as Planning Area 3 is built. Other land uses include drainage structures, settling basins, monitoring systems, and an equipment storage area.

Landfill Planning Area No. 5. This area will encompass about 516 acres and be used for excavation and processing of the fine and coarse tailings for use in the landfill liner and cover

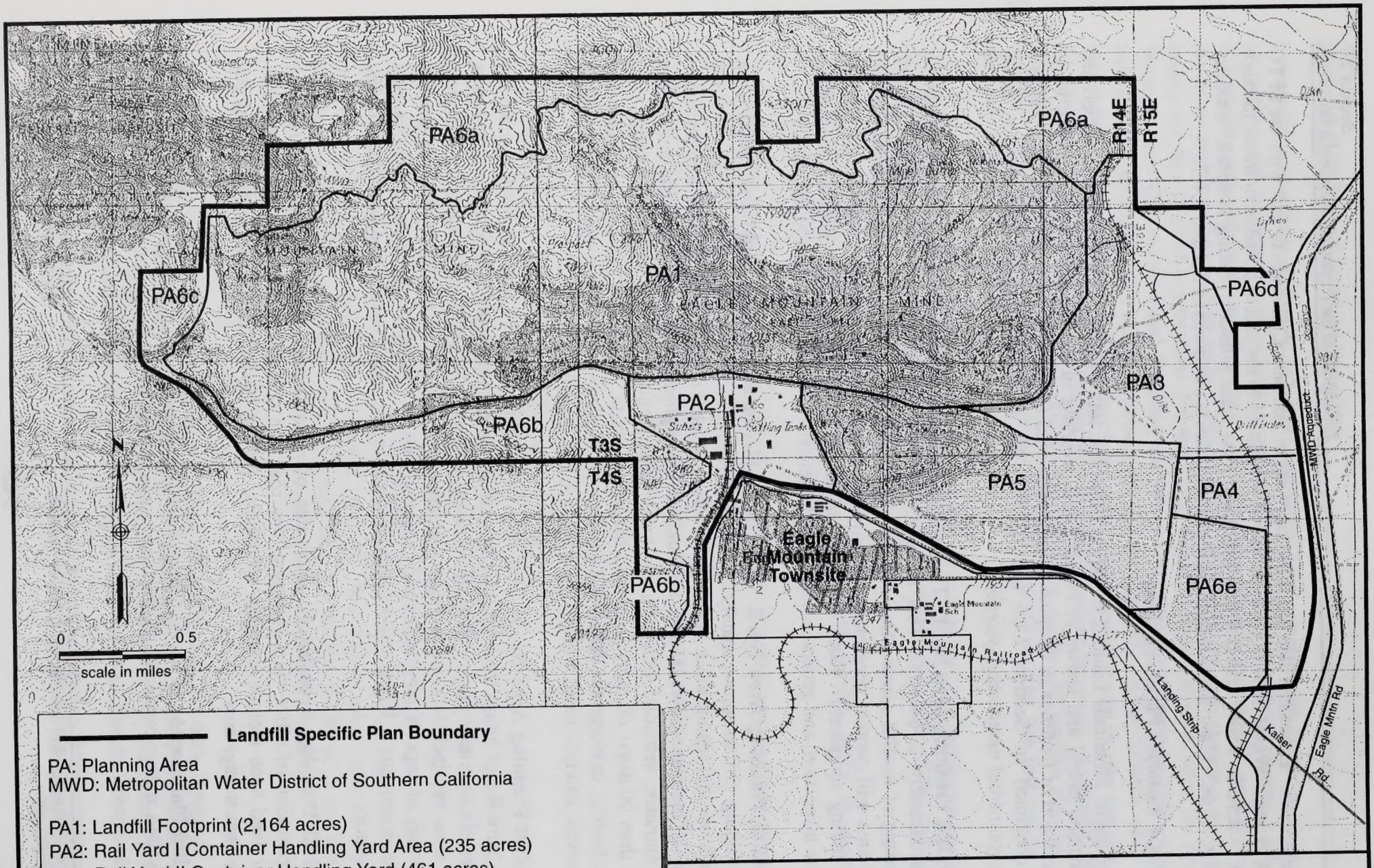


Figure 2-8
Landfill Planning Areas
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

systems. Land uses will also include development of drainage structures, monitoring systems, and gas flare systems. This area also contains a water storage tank for the landfill.

Landfill Planning Area No. 6. This area contains approximately 1,132 acres and will consist of lands designated for open space use. Land in this area will generally remain undisturbed except for the following uses: peripheral drainage structures, detention basins, access roads, monitoring systems, and existing water storage for domestic water supplies for the landfill and the Townsite.

2.1.5 Design

This section summarizes the major design components of the proposed Eagle Mountain Landfill. Additional data on landfill design are presented in Sections 6 and 11 of the ROWD (GeoSyntec, 1992) and other supporting data (GeoSyntec, 1993a). The Eagle Mountain Landfill is designed to meet or exceed all applicable federal and state regulations for the design and operation of municipal solid waste landfills, including recent amendments applicable to liner design. (A list of these regulations is in Appendix B, Project Description Supporting Information.)

The Eagle Mountain Landfill is designed to handle and dispose of up to 20,000 tons of municipal solid waste each day at full operation. The total waste capacity of the landfill will be approximately 708 million tons. The capacity for each phase of landfill development is shown in Table 2-2. The landfill footprint (i.e., the lined area where disposal occurs) will cover approximately 2,164 acres. The buffer area and ancillary facilities will occupy another 2,490 acres. These ancillary facilities will consist of: (1) Phases 1 and 2 of rail and truck marshaling yards and off-loading equipment, (2) truck scales, (3) administration building, (4) local waste receiving facility, (5) roads and onsite drainage, (6) fueling facilities, (7) truck staging areas, (8) maintenance buildings, (9) water wells and associated tanks and piping, and (10) environmental monitoring equipment. These facilities are described in detail later in this section.

Table 2-2
Capacity of the Eagle Mountain Landfill for Each Phase of Development

Phase of Landfill Development	Net Waste Volume (million tons)
1	83
2	71
3	195
4	121
5	238
Total	**708**

The Eagle Mountain Landfill is designed to be constructed in five phases (phasing of the landfills is discussed in detail in Section 2.1.6.1). Each phase has a volume of approximately 100 to 200 million tons of refuse. The net volume of waste for each phase is shown in Table 2-2. Construction and operation of each phase of the landfill is designed to progress

generally from west to east. Development within each phase will occur in subphases and will progress from south to north. Each subphase will typically be about 10 to 30 acres in area. The exact acreage of each subphase will depend upon the location of waste filling and the anticipated daily waste volume. The active working area (i.e., area with uncovered waste where disposal activities are currently taking place) within each subphase will be less than 2 acres. After final design grades are achieved, the site will be closed in increments. The landfill build-out (i.e., 2,164 acres) is estimated to occur approximately 100 years after startup.

The primary components of the landfill are discussed in the following sequence:

- Composite liner system
- Leachate collection and removal system
- Active landfill gas extraction system
- Interim and final cover systems
- Leachate management system
- Surface water management system
- Landfill gas management system

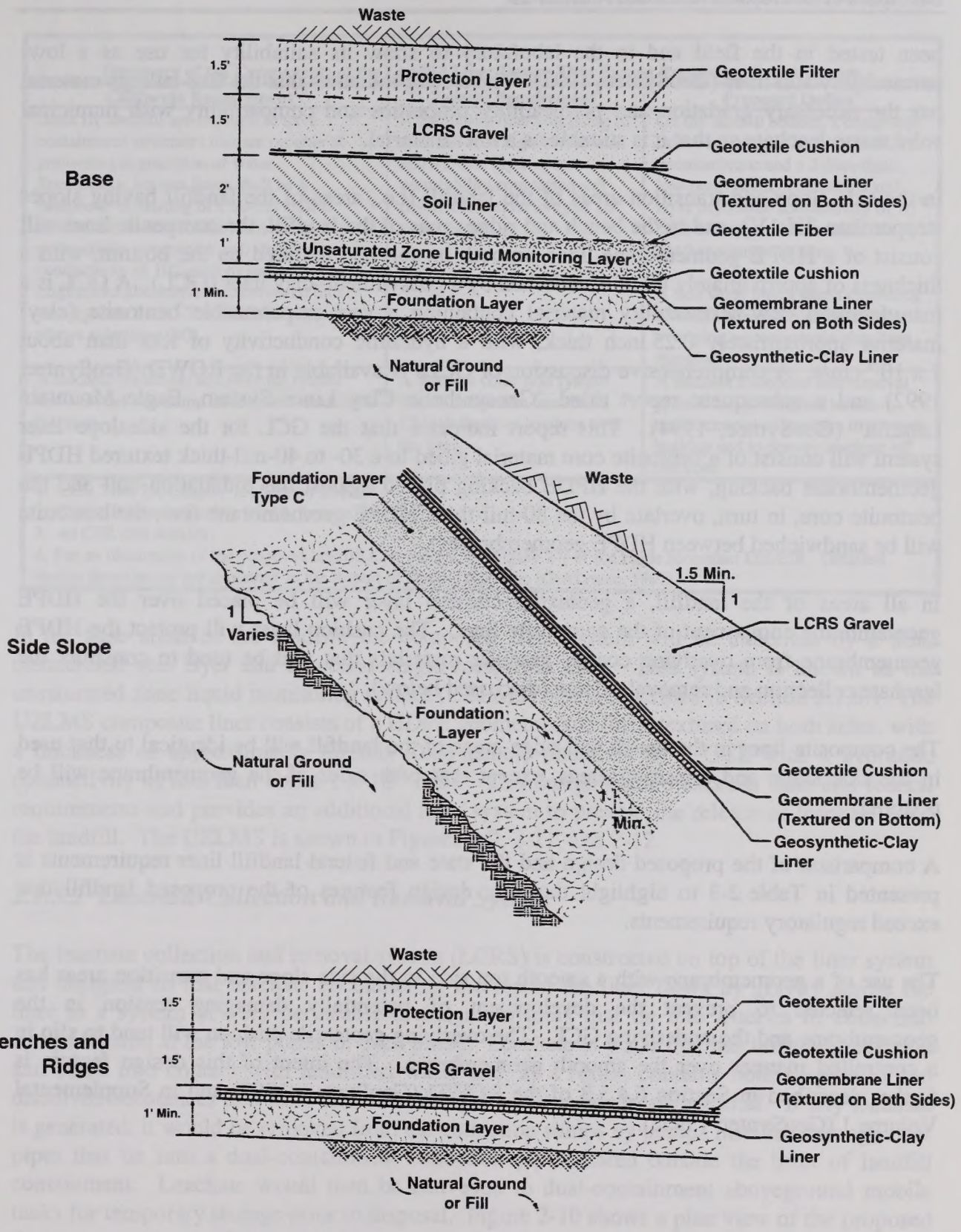
These systems work in combination to isolate the waste and contain and remove any leachate and landfill gas that may be produced. The environmental site monitoring systems associated with these components are discussed in Section 2.1.8.

2.1.5.1 Composite Liner System

The main features of the liner system for the Eagle Mountain Landfill are discussed below and shown in Figure 2-9. Additional information on the liner system is contained in Subsections 6.4 and 6.5 of the ROWD (GeoSyntec, 1992).

The composite liner system for the Eagle Mountain Landfill is a multilayered system designed to contain leachate and landfill gas that might be generated by the disposal of waste at the landfill. This system allows any leachate that is generated to be collected and removed from the landfill by pumping. Leachate is water that has infiltrated through and come into contact with landfilled waste and, as a result, contains both suspended and dissolved substances from the waste material. The liner system will underlie the entire landfill footprint (i.e., base and side slope areas) and will consist of a single-composite liner immediately overlain by granular leachate collection and removal system (LCRS).

In the base areas of the landfill (i.e., the bottom areas of canyons and pits having slopes of 3 horizontal:1 vertical [3H:1V] or flatter), the composite liner will consist of a high-density polyethylene (HDPE) geomembrane (plastic) liner, textured on both sides, with a thickness of approximately 80 mils (0.08 inches) underlain by a low-permeability soil liner with a hydraulic conductivity of not more than 1×10^{-7} centimeters per second (cm/s) and a thickness of at least 2 feet. The low-permeability soil liner will be constructed using fine tailings material available at the Eagle Mountain Project site. The fine tailings material has



LCRS: Leachate Collection and Removal System

SOURCE: GEOSYNTEC, 1992, DRAWING NO. 29

(SCALE: NTS)

Figure 2-9
Schematic of Landfill Liner System
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 liner 6/96

been tested in the field and in the laboratory to show its suitability for use as a low-permeability soil liner (GeoSyntec, 1992). The testing indicates that the fine tailings material has the necessary gradation and permeability properties and compatibility with municipal solid waste leachate so that it is suitable as a liner material.

In the side slope and transition areas of the landfill (i.e., areas of the landfill having slopes steeper than 3H:1V), and in the bench and ridge areas of the landfill, the composite liner will consist of a HDPE geomembrane liner, smooth on top and textured on the bottom, with a thickness of approximately 80 mils underlain by a geosynthetic-clay liner (GCL). A GCL is a manufactured, low-permeability material containing a very impermeable bentonite (clay) material approximately 0.25 inch thick, with a hydraulic conductivity of less than about 1×10^{-9} cm/s. A comprehensive discussion of GCLs is available in the ROWD (GeoSyntec, 1992) and a subsequent report titled "Geosynthetic Clay Liner System, Eagle Mountain Landfill" (GeoSyntec, 1994). This report indicates that the GCL for the sideslope liner system will consist of a bentonite core material glued to a 30- to 40-mil-thick textured HDPE geomembrane backing, with the HPDE backing placed against the foundation soil and the bentonite core, in turn, overlain by the 80-mil-thick HDPE geomembrane (i.e., the bentonite will be sandwiched between HDPE geomembranes).

In all areas of the landfill, a geotextile cushion layer will be placed over the HDPE geomembrane component of the composite liner. The cushion layer will protect the HDPE geomembrane from overlying coarse, granular materials that will be used to construct the leachate collection and removal system (discussed below).

The composite liner in the bench and ridge areas of the landfill will be identical to that used in the side slope and transition areas, except that both sides of the geomembrane will be textured.

A comparison of the proposed design and the state and federal landfill liner requirements is presented in Table 2-3 to highlight the liner design features of the proposed landfill that exceed regulatory requirements.

The use of a geomembrane with a smooth top side in the side slope and transition areas has been selected to prevent the development of potentially damaging tension in the geomembrane and the underlying GCL. The overlying geotextile cushion will tend to slip in a controlled manner over the smooth geomembrane. The intent of this design feature is further described in Section 6.4.3.3 of the ROWD (GeoSyntec, 1992) and in Supplemental Volume 1 (GeoSyntec 1993a).

Table 2-3
Summary of the Components of the Landfill Liner Design That Exceed Regulatory Requirements

California Requirement[1,2]	Federal Requirement[3]	Proposed Design[4]
Class III landfills are required to have containment structures that are capable of preventing degradation of water. Specifically, bottom liners shall be a composite consisting of a 60-mil HDPE geomembrane and a 2-foot layer of low-permeability compacted soil (hydraulic conductivity of 10^{-7} cm/s or less). Engineered alternatives are reviewed on a case-by-case basis. The SWRCB resolution allows side slope GCL.	A composite liner consisting of a 60-mil HDPE geomembrane and a 2-foot layer of low permeability compacted soil (hydraulic conductivity of 10^{-7} cm/s or less).	On the landfill bottom, a composite liner consisting of an 80-mil HDPE geomembrane and a 2-foot-thick, low-permeability compacted soil layer (hydraulic conductivity of 10^{-7} cm/s or less), which is underlain by another composite liner. A side slope liner system consisting of an 80-mil HDPE geomembrane overlying a geosynthetic clay liner material.
A leachate collection and removal system that conveys to a sump all leachate reaching the liner.	A leachate collection system that will maintain less than a 12-inch depth of leachate over the liner.	A leachate collection and removal system that is designed to allow rapid removal of leachate to prevent buildup and to convey leachate off the liner.

1. CCR Title 23, Chapter 15, Section 2540(c)
2. SWRCB Resolution No. 93-62, Section 7.a
3. 40 CFR 258.40(a)(b)
4. For an illustration of the proposed landfill liner design, see Figure 2-9 of the Eagle Mountain EIS/EIR. Detailed design descriptions are contained in the Report of Waste Discharge (GeoSyntec, 1992).

In the base areas of the landfill, the composite liner system will be underlain by a thin, unsaturated soil layer and a second single-composite liner. This system is known as the unsaturated zone liquid monitoring system (UZLMS) and is described in Section 2.1.8.1. The UZLMS composite liner consists of a HDPE geomembrane liner, textured on both sides, with a thickness of approximately 80 mils (0.08 inches) underlain by a GCL with a hydraulic conductivity of less than about 1×10^{-9} cm/s. This design feature exceeds state and federal requirements and provides an additional liner system to prevent the release of leachate from the landfill. The UZLMS is shown in Figures 2-9, 2-11, and 2-12.

2.1.5.2 Leachate Collection and Removal System

The leachate collection and removal system (LCRS) is constructed on top of the liner system and designed so that leachate encountering the top of the liner flows by gravity across the liner to a system of very permeable drainage corridors that tie into a series of collection sumps located at the low points of each phase. Leachate is water that has infiltrated through and come into contact with landfilled waste and, as a result, contains both suspended and dissolved substances and trace amounts of organics from the waste material. If any leachate is generated, it would be removed from the collection sumps by pumps installed through riser pipes that tie into a dual-containment collection pipe located outside the limit of landfill containment. Leachate would then be conveyed to dual-containment aboveground mobile tanks for temporary storage prior to disposal. Figure 2-10 shows a plan view of the proposed drainage corridors and sumps for the overall LCRS. A cross-sectional view of the LCRS for the bottom of the landfill is shown in Figure 2-11, and a cross-sectional view of the LCRS in sumps is shown in Figure 2-12.

The LCRS will be installed above the composite liner in all areas of the landfill and will be composed of a granular blanket drain (drainage layer) with a minimum slope of 4 percent, which exceeds the federal regulatory minimum of 2 percent. In the base areas of the landfill and in bench and ridge areas, the drainage layer will consist of coarse, granular drainage material with a hydraulic conductivity of at least 1 centimeter per second (cm/s), which exceeds the regulatory minimum of .01 cm/s. An 18-inch-thick, granular protection layer will be placed over the drainage layer. A geotextile filter will be incorporated between the drainage and protection layers to control the migration of fine particles. In the side slope areas of the landfill, the LCRS will consist of a single layer of coarse, granular drainage material at least 3 feet thick with a hydraulic conductivity of at least 1×10^{-2} cm/s.

The LCRS drainage corridors will be constructed in the low points of major graded canyon and pit areas. Liquids captured in the LCRS drainage layer will flow by gravity to the drainage corridors that will convey the liquids to LCRS sumps. The drainage corridors will be constructed with a central core of gravel material that has a hydraulic conductivity of at least 10 cm/s (see Figure 2-11). A geotextile filter will encapsulate the drainage corridor gravel to control the migration of fines from surrounding materials into the gravel.

The landfill will contain 12 LCRS sumps, with each collection sump designed to allow the removal of leachate by pumping. In the collection sump areas, the composite liner will be enhanced by the addition of an 80-mil-thick HDPE geomembrane liner underlain by a reinforced GCL placed below the upper composite liner. Side slope risers will be constructed from the low point of each sump to the ground surface outside the limit of landfill containment.

Leachate that drains into the LCRS sumps will be removed using one dedicated submersible pump per sump placed in the side slope risers at the low point of the sumps. The pumps will operate when a sufficient depth of leachate is available to allow for proper pump operation. Two side slope risers, rather than the required one, will be installed in each sump to provide redundancy, additional capacity, and the ability to flush the sumps if necessary. In addition, an LCRS test pipe will also be located in each sump to improve the ability to flush the sumps and to provide a means of testing the sumps to ensure acceptable long-term performance.

The LCRS is designed to allow sampling of the leachate both in the collection sumps and in the storage tanks. The results of the sampling, which, at a minimum will occur quarterly in accordance with 14 CCR §17781, will enable a determination of the end use of the leachate. If the leachate is determined to be hazardous it will be trucked offsite for treatment and disposal, as approved by the RWQCB. If the leachate is determined to be nonhazardous, it could be returned to the landfill (e.g., used for dust control).

2.1.5.3 Active Landfill Gas Extraction System

An active gas extraction or removal system will be used to remove gas that is generated by the decomposition of waste from the landfill. The active gas extraction system will be

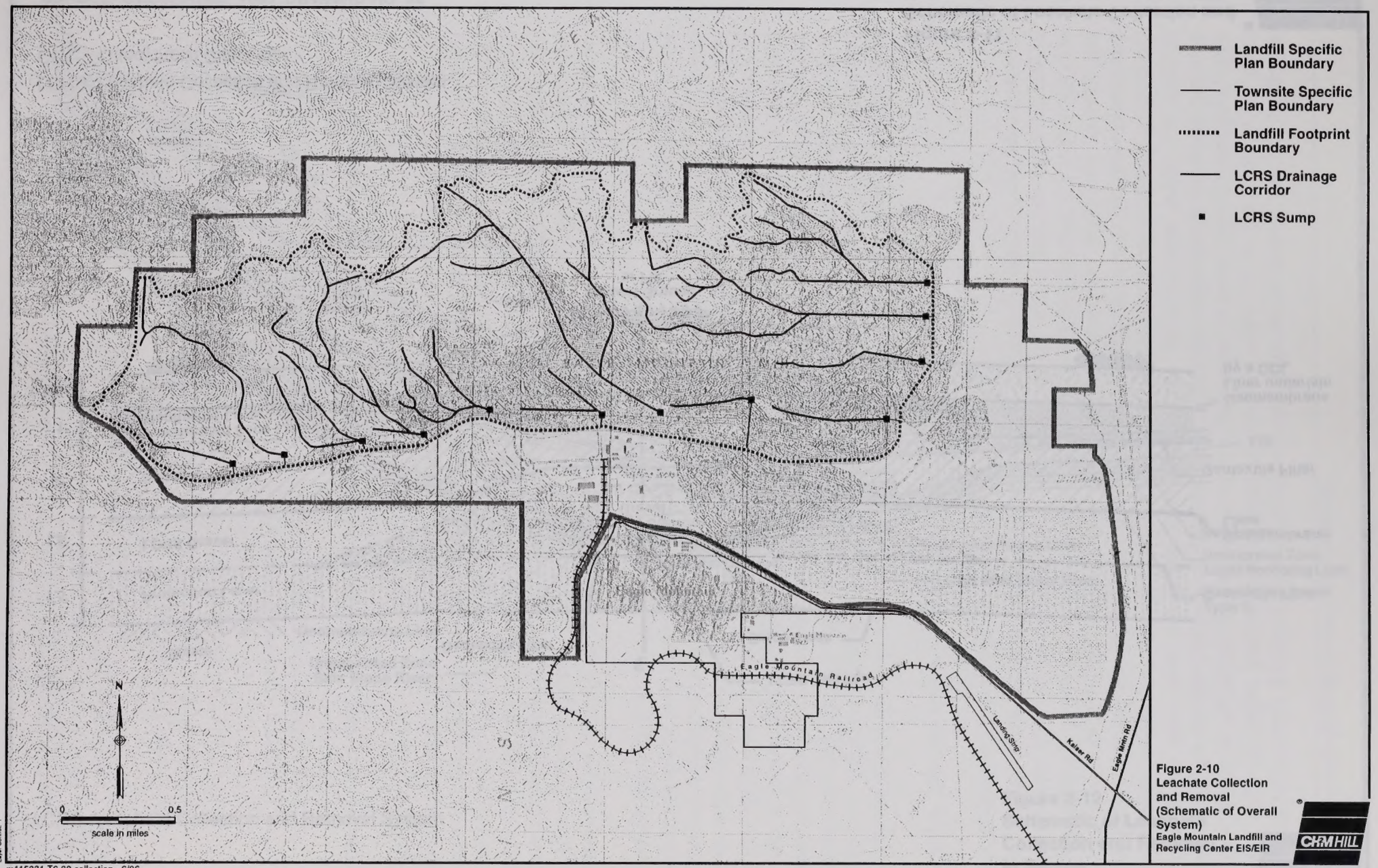
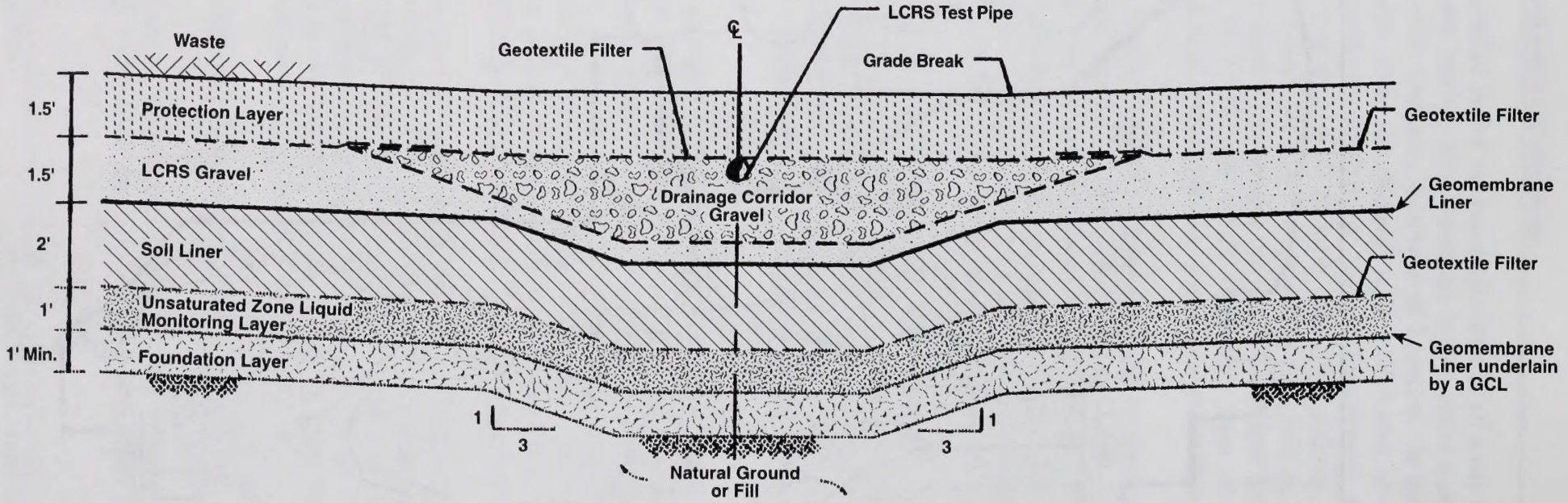


Figure 2-10
Leachate Collection and Removal (Schematic of Overall System)
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2MHILL

Layer Control: 1

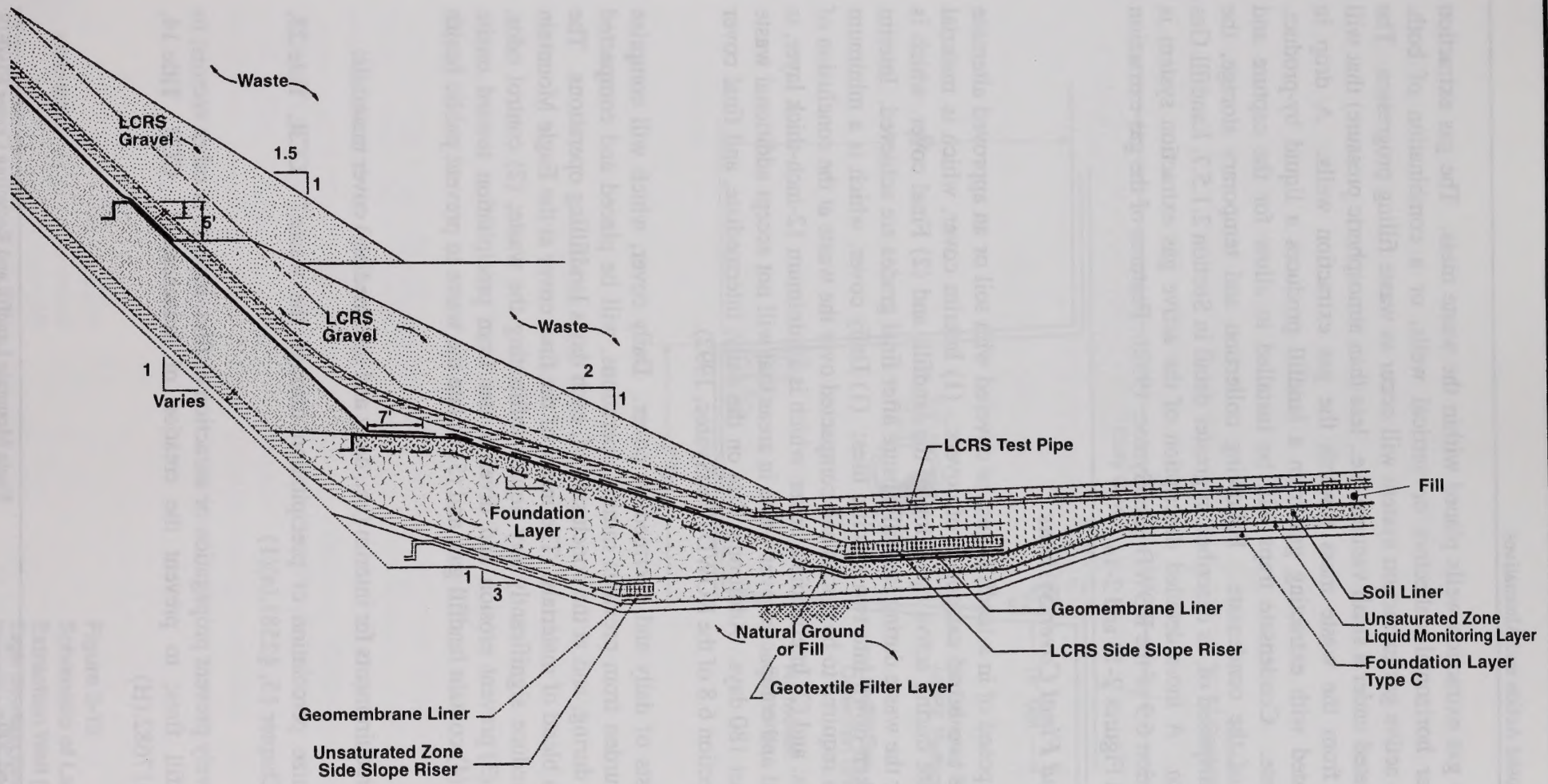
m115231.T6.20 collection 6/96



LCRS: Leachate Collection and Removal System
GCL: Geosythetic Clay Liner

SOURCE: GEOSYNTEC, 1992, DRAWING NO. 35
(SCALE: NTS)

Figure 2-11
Schematic of Leachate Collection and Removal System (bottom of landfill)
Eagle Mountain Landfill and Recycling Center EIS/EIR



LCRS: Leachate Collection and Removal System

SOURCE: GEOSYNTEC, 1992, DRAWING NO. 36
(SCALE: NTS)

Figure 2-12
Schematic of Leachate Collection and Removal in Sumps
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

comprised of many gas extraction wells placed within the waste mass. The gas extraction wells will be either horizontal collectors or vertical wells, or a combination of both. Construction of the active gas extraction system will occur as waste filling progresses. The system will be operated under a small vacuum (i.e., less than atmospheric pressure) that will promote gas flow from the waste mass towards the gas extraction wells. A drop in temperature associated with extracting gas from a landfill produces a liquid by-product, known as condensate. Condensate traps will be installed to allow for the capture and temporary storage of the condensate. Following collection and temporary storage, the condensate will be disposed of, as described in greater detail in Section 2.1.5.7, Landfill Gas Management System. A more detailed description of the active gas extraction system is presented in Subsection 6.9 of the ROWD (GeoSyntec, 1992). Features of the gas extraction system are shown in Figures 2-13 and 2-14.

2.1.5.4 Interim and Final Cover Systems

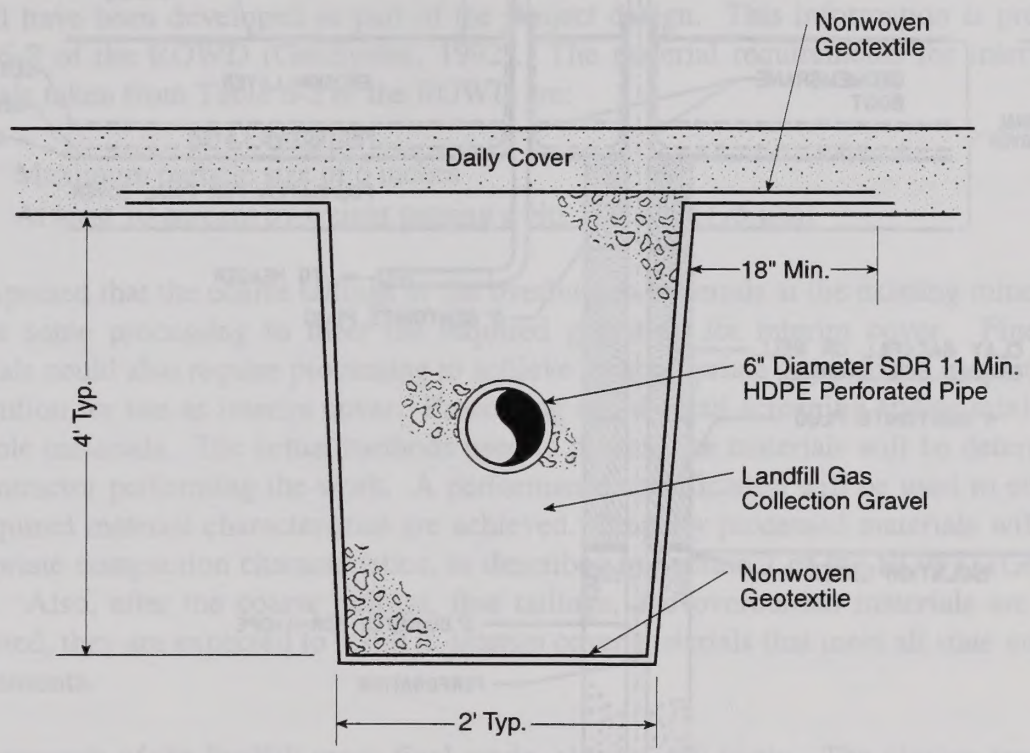
All waste that is disposed of in a landfill must be covered with soil or an approved alternate material. There are two broad categories of covers: (1) Interim cover, which is material placed over the waste during active operation of the landfill; and (2) Final cover, which is material placed over the waste during landfill closure after final grades are achieved. Interim cover is further broken down into two specific uses: (1) Daily cover, which is a minimum 6-inch-thick layer, is required to be placed and compacted over the waste at the conclusion of each day's operations; and (2) Intermediate cover, which is a minimum 12-inch-thick layer, is required to be placed and compacted over waste in areas that will not accept additional waste placement for at least 180 days. Additional data on the daily, intermediate, and final cover systems are in Subsection 6.8 of the ROWD (GeoSyntec, 1992).

Interim cover consists of daily and intermediate cover. Daily cover, which will comprise both soil and overburden from previous mining operations, will be placed and compacted over exposed waste during, and at the conclusion of, each day's landfilling operations. The daily cover will be a blend of materials. The intent of the final cover at the Eagle Mountain Landfill is to: (1) reduce significantly any liquids infiltrating the waste; (2) control odor, vectors, and litter; (3) prevent erosion and divert water from precipitation toward onsite drainage structures; (4) contain landfill gas; and (5) isolate the waste to prevent public health concerns.

There are two basic requirements for interim (i.e., daily and intermediate) cover materials:

- To "...minimize percolation of precipitation through the waste." CCR, Title 23, Division 3, Chapter 15, §2581.(a)(1)

- To "...effectively prevent propagation or attraction of flies, rodents or other vectors; to control landfill fires; to prevent the creation of nuisances..." CCR, Title 14, Division 7, §17682.(H)

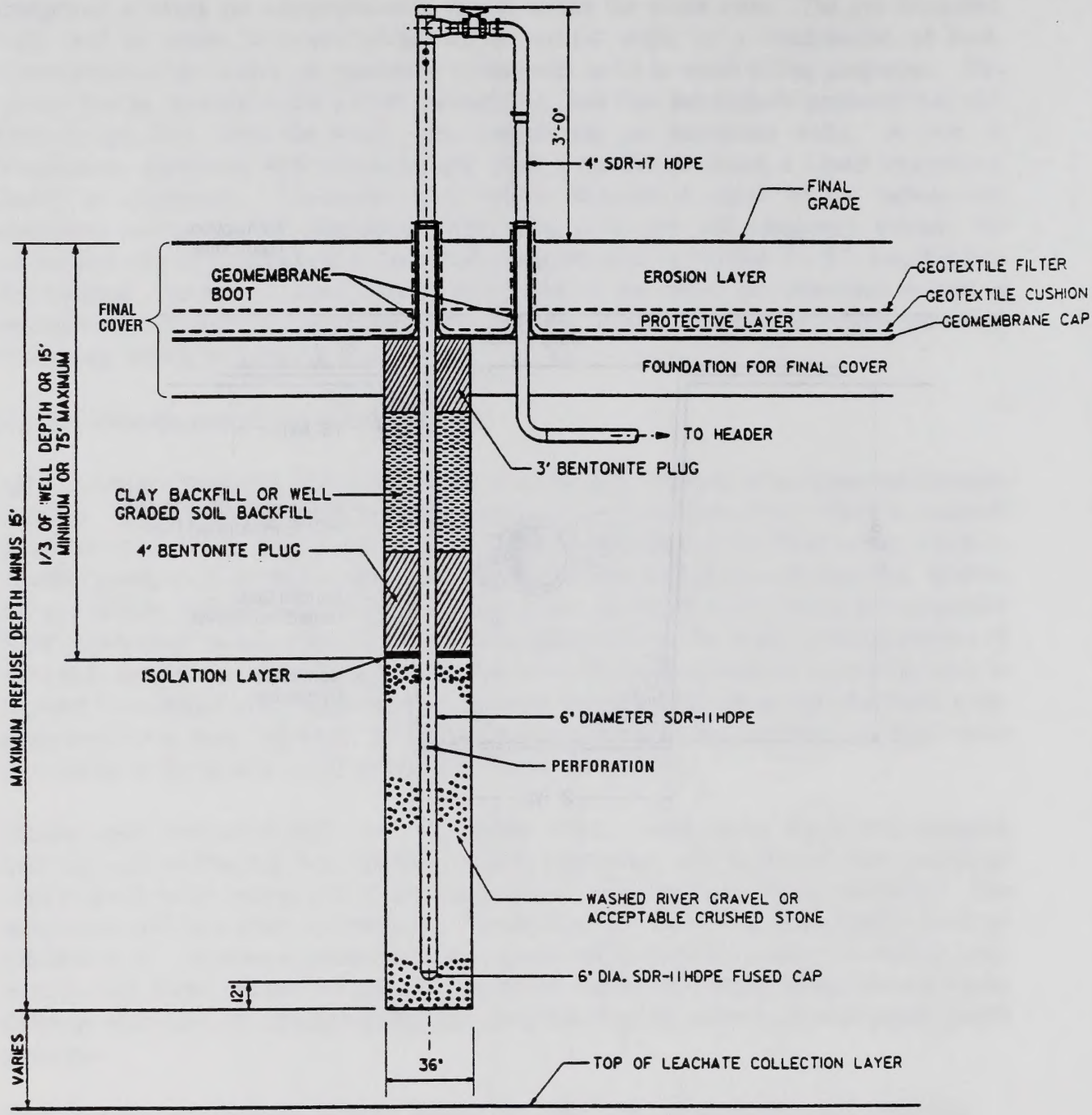


not to scale

Figure 2-13
Schematic of Landfill Gas Extraction Well (Horizontal)
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 schm 6/96



TYPICAL COMPLETED LANDFILL GAS EXTRACTION WELL

SCALE: NTS

SOURCE: GEOSYNTEC, 1992, DRAWING NO. 51

Figure 2-14
Schematic of Landfill Gas Extraction Well (Vertical)
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2MHILL

m115231.T6.20 extract 6/96

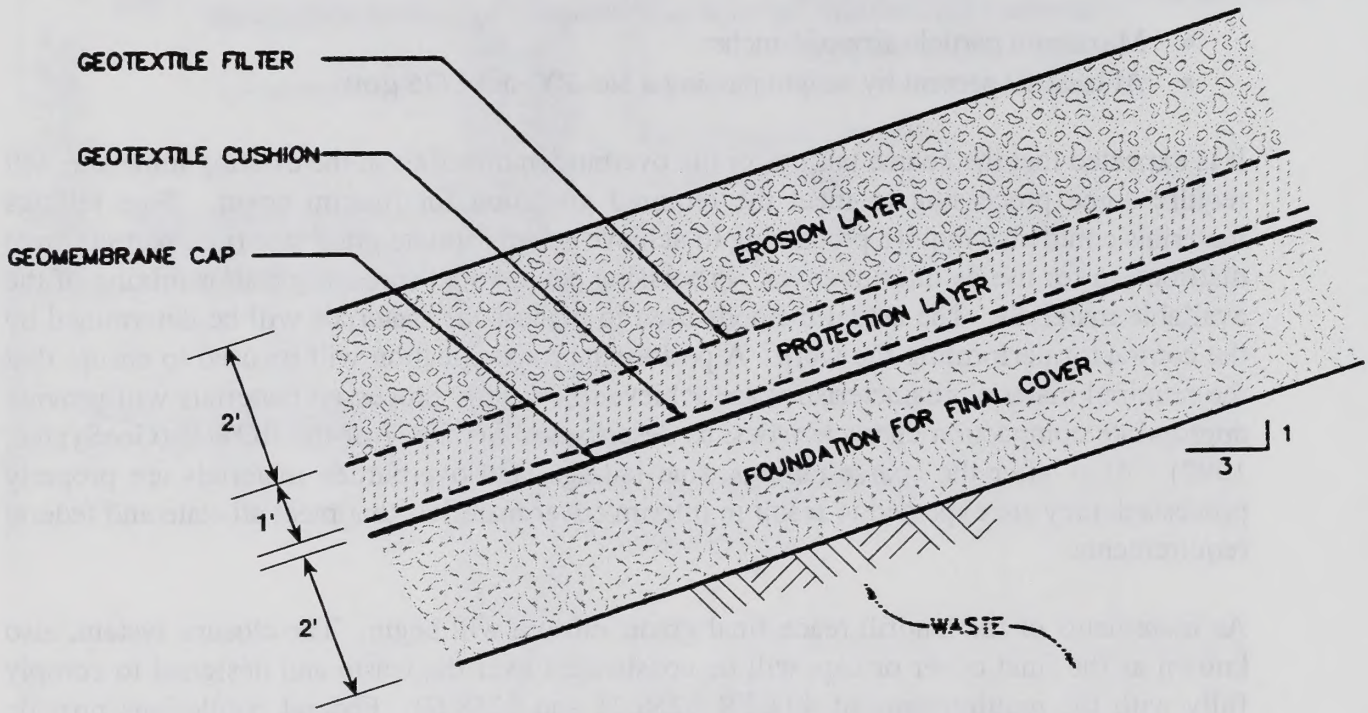
The interim cover materials to be used at the proposed landfill comply with these requirements. There are several potential material sources for daily cover at the Eagle Mountain Landfill, including coarse tailings, fine tailings, and overburden materials. The characteristics of these materials are described in detail in Sections 6 and 7 of the ROWD (GeoSyntec, 1992).

Required earth material characteristics for every applicable component of the proposed landfill have been developed as part of the Project design. This information is provided in Table 6-2 of the ROWD (GeoSyntec, 1992). The material requirements for interim cover materials taken from Table 6-2 of the ROWD are:

- Maximum particle size of 6 inches
- At least 10 percent by weight passing a No. 200 sieve (75 μm)

It is expected that the coarse tailings or the overburden materials at the existing mine site will require some processing to meet the required gradation for interim cover. Fine tailings materials could also require processing to achieve an appropriate grain size (i.e., particle size) distribution for use as interim cover. Processing could entail screening and/or mixing of the available materials. The actual methods used to process the materials will be determined by the contractor performing the work. A performance specification will be used to ensure that the required material characteristics are achieved. Properly processed materials will provide appropriate compaction characteristics, as described in Section 7 of the ROWD (GeoSyntec, 1992). Also, after the coarse tailings, fine tailings, and overburden materials are properly processed, they are expected to result in interim cover materials that meet all state and federal requirements.

As increments of the landfill reach final grade, closure will begin. The closure system, also known as the final cover or cap, will be constructed over the waste and designed to comply fully with the requirements of 40 CFR §258.21 and §258.60. Federal regulations provide illustrations of several "correct" liner and final cover systems (57 FR 28626, 28627 (June 26, 1992). One of these "correct" liners systems described by EPA is a single-composite liner system consisting of an 80-mil-thick geomembrane underlain by a 3-foot-thick compacted soil liner providing a hydraulic conductivity of no more than $1x10^{-7}$ cm/s. The corresponding "correct final cover" for this liner is stated to be a "minimum infiltration layer of 18 inches of $1x10^{-5}$ cm/sec earthen material overlain by a synthetic liner...overlain by minimum 6-inch erosion layer." The proposed final cover for the Eagle Mountain Landfill will exceed this requirement. The final cover will have a minimum thickness of 4 feet and will be constructed as individual subphases of the landfill are closed. The top layer of the final cover is designed to blend in, to the extent possible, with the existing desert landscape and to contribute to performing the five functions previously mentioned. The design of the final cover is depicted in Figure 2-15 and will consist of, from bottom to top:



SCALE: NTS

SOURCE: GEOSYNTEC, 1992, DRAWING NO. 39

Figure 2-15
Schematic of Final Cover System
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 cvrsystem 6/96

- A 2-foot-thick foundation for final cover layer constructed on the final waste surface; the bottom 6 inches of this layer could consist of previously placed intermediate or daily cover; the upper 18 inches of the layer will have a hydraulic conductivity no greater than 1 x 10^{-9} cm/s
- A 40-mil-thick flexible geomembrane (plastic) liner, providing a maximum hydraulic conductivity of 1 x 10^{-9} cm/s
- A geotextile cushion layer
- A 1-foot-thick soil protection layer
- A geotextile filter layer
- A 2-foot-thick erosion layer consisting of cobble- and boulder-sized material with an average particle diameter of about 18 inches

Additional data on the cover design are presented in the ROWD (GeoSyntec, 1992). A comparison of the proposed cover design and the state and federal regulations governing cover design is presented in Table 2-4 to highlight the cover system design features of the proposed landfill.

Table 2-4
Components of Landfill Cover Design That Exceed Regulatory Requirements [1]

California Requirements[2]	Federal Requirements[3]	Proposed Design	Comments
Competent foundation layer, which is 2 feet thick.	N/A	A 2-foot-thick, compacted foundation layer, which meets the state criteria. The upper 18 inches will have a hydraulic conductivity no greater than 1 x 10^{-5} cm/s.	A low-permeability soil barrier alone could dry out in the arid environment, potentially resulting in a significant reduction in the performance of the final cover.
A 1-foot-thick, low-permeability layer with a maximum hydraulic conductivity of 1x10^{-6} cm/s, overlying the foundation layer.	An 18-inch-thick infiltration layer with a permeability no greater than the liner system with maximum hydraulic conductivity of 1x10^{-5} cm/s.	A low-permeability geomembrane barrier layer consisting of 40-mil-thick flexible geomembrane providing a hydraulic conductivity of less than 1 x 10^{-9} cm/s that is overlain by a nonwoven cushion geotextile.	The proposed flexible geomembrane would function to minimize infiltration and can withstand significant strain that could occur if the waste compresses or settles.
A 1-foot-thick soil layer overlying the low-permeability layer.	A 6-inch-thick erosion layer.	A 1-foot-thick protective layer of soil, plus a 2-foot-thick erosion layer of cobbles.	The erosion protection layer is at least twice the required thickness.

1. The order of the components listed is from bottom of cover to the top.
2. CCR Title 23, Chapter 15, Section 2581(a)(b).
3. 40 CFR 258.60(a).

2.1.5.5 Leachate Management System

The leachate management system will allow for the storage and disposal of leachate removed from the landfill LCRS. Leachate pumped out of the LCRS sumps will be discharged into a dual-containment, gravity-fed leachate transmission pipeline located outside of the landfill footprint. The leachate transmission pipeline will be used to convey leachate to temporarily or permanently located onsite storage tanks. Secondary containment will be provided for all leachate conveyance and storage facilities outside the landfill footprint.

When a sufficient quantity of leachate accumulates in a leachate storage tank, it will be transferred into a transport truck and delivered to an approved wastewater treatment facility, probably in the County of Riverside. The system is designed to allow monitoring of the quantity and quality of leachate removed from the LCRS sumps. Sampling points will be established at each LCRS sump location. Quarterly sampling, testing, and reporting of leachate characteristics, such as quantity and chemical composition, will be performed in accordance with state regulatory requirements. Additional data on the leachate management system is given in Subsection 6.6 of the ROWD (GeoSyntec, 1992).

2.1.5.6 Surface Water Management System

The surface water management system for the landfill has been designed to: (1) convey surface water around and away from the active portion of the landfill during and after landfill operations, and (2) convey flows and control erosion on the landfill surface after intermediate or final cover has been placed.

Two categories of surface water flow at and around the landfill site are: (1) noncontact water, and (2) contact water. Noncontact water is defined as surface water runoff that does not come into contact with either waste or daily cover within the active area of the landfill. Noncontact water will be routed around the perimeter of the active working area and discharged into detention basins. Contact water is defined as surface water run-on that comes into contact with waste. After contact with waste, it is allowed to infiltrate through the waste mass to the LCRS where it will be collected and treated as leachate. Components of the surface water management system for the Eagle Mountain Landfill include:

- Interim drainage control and erosion and sediment control features within the landfill footprint, such as temporary detention basins, swales, ditches, berms, silt fences, and hay bales to collect and control flow during landfilling operations. These measures will be modified as landfilling operations progress.

- Final drainage control and erosion and sediment control features within the landfill footprint, such as benches, downchutes, and energy dissipaters to collect and convey flow across portions of the landfill where the final cover has been constructed.

- Final drainage control and erosion and sediment control features outside the landfill footprint, such as drainage channels, downchutes, energy dissipaters, and detention basins to collect and convey flow around the perimeter of the landfill.

Drainage structures will be sized to meet the State of California and County design requirements for accommodating runoff from selected storms. Surface water drainage features on the landfill final cover are designed for the 100-year, 1-hour rainfalls. Drainage structures outside the landfill footprint, including detention basins, are designed to contain runoff from the most critical of the 100-year, 3-hour, 6-hour, and 24-hour rainfalls. In addition, these drainage structures are designed with sufficient freeboard to contain runoff from a 500-year, 3-hour rainfall. Surface water flow diverted from or collected outside the landfill footprint will be routed to either interim detention basins or detention basins constructed along a north perimeter maintenance road. The surface water management system is shown in Figure 3.6-1 in Section 3.6, Surface Water Drainage and Flooding, and is described in detail in Section 6.7 of the ROWD (GeoSyntec, 1992).

2.1.5.7 Landfill Gas Management System

The landfill gas (LFG) management system provides a mechanism for managing LFG after it is extracted from the landfill. The LFG management system also provides for the control of LFG condensate. The primary components of the LFG management system include:

- Main LFG header lines, which are located outside the footprint of the landfill, that allow extracted LFG from the vertical and horizontal wells to be conveyed to the onsite disposal area.

- Several dedicated LFG condensate storage tanks where condensate will be stored until it is removed for treatment and/or disposal.

- Several enclosed LFG thermal combustors (i.e., flares) that will be used to dispose safely of the LFG, and possibly LFG condensate.

- An energy recovery facility that could be used to dispose of LFG if LFG is produced in sufficient quantity and quality to allow cost-effective energy generation and sales.

The LFG management system will be constructed sequentially on the basis of the amount of waste in place at the landfill and the observed LFG generation rates. The purpose of this phased installation is to control the gas as it is generated. The gas generated by municipal solid waste decomposition consists primarily of methane and carbon dioxide and will be collected by a series of vertical gas collection wells and/or horizontal collection pipes constructed into the waste as discussed above in Section 2.1.5.3, Active Landfill Gas Extraction System.

The LFG management system will allow for conveying, treating, and disposing of LFG extracted by the active gas extraction system, and for storing and disposing of LFG

condensate. During the initial years of landfill operation, when the LFG production rate is low, LFG will be burned in a fully enclosed thermal combustor (i.e., flare). In the future, when there is sufficient gas generation (i.e., approximately 2 to 5 million cfd), the development of an onsite energy recovery facility will be considered, based on the results of a detailed study of the quality and quantity of LFG produced at the landfill and market conditions at that time.

LFG condensate that accumulates in traps will be periodically pumped into condensate storage tanks (that will have dual containment) or directly into the leachate transmission pipeline at the south side of the landfill. LFG condensate will be disposed of at an approved treatment facility.

The LFG management system will also have provisions for monitoring of LFG quantity and quality. Monitoring results will be used to adjust periodically the active gas extraction system. Additional data on the landfill gas management system is presented in Subsection 6.10 of the ROWD (GeoSyntec, 1992).

2.1.6 Landfill Development

This section discusses the phasing of the landfill development and the construction of the ancillary facilities required for landfill operations.

2.1.6.1 Phasing of Landfill Development

The Eagle Mountain Landfill will be developed as a single waste management unit using the canyon and pit fill method. The canyon and pit fill method consists of placing waste in canyons and/or pits that have been prepared to accept the waste by grading and construction of a liner system. The waste can be placed at the head (i.e., up slope) end of the canyon or it could be placed at the mouth (i.e., down slope) end of the canyon. Waste at the Eagle Mountain Landfill will be placed and compacted starting at the mouth of each canyon and the lowest (i.e., deepest) area of the pits. Surface water drainage systems will direct stormwater flow around the waste areas. Construction and accompanying operations will be implemented in five contiguous phases, generally from west to east. Each landfill phase will be separated into subphases to facilitate construction of the liner system and to optimize site operations. Each subphase will comprise from 10 to 30 acres, and the subphases generally will be developed from lower to higher elevations. Within the 10- to 30-acre subphase area, the active working area will be less than 2 acres (the exact acreage will depend on the daily volume of incoming waste). The five phases are shown in Figure 2-16.

As described previously, extensive site-specific technical studies have already been completed in support of this document, the previous EIS/EIR, and the ROWD (GeoSyntec, 1992). Prior to construction of each subphase, construction-level design will be completed and associated construction plans and specifications will be prepared and submitted to the

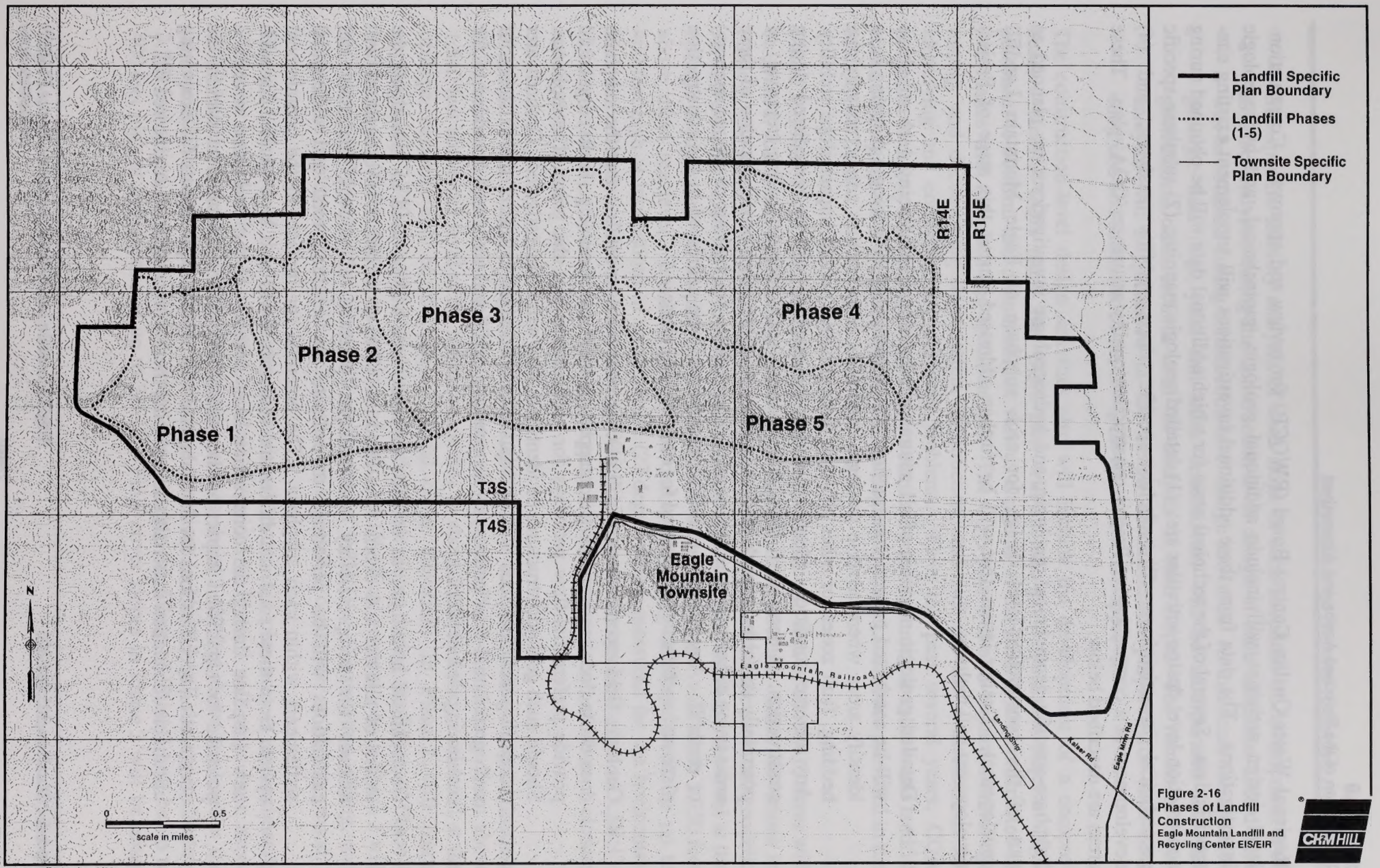


Figure 2-16
Phases of Landfill Construction
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2MHILL

Layer Control: 1.2

m115231.T6.20 site 6/96

Regional Water Quality Control Board (RWQCB) for review and approval. Construction-level design activities will include additional geologic, geotechnical, and hydrogeologic investigations. The data from these additional investigations will supplement existing site-specific data. Several of the technical areas for which additional data will be obtained during construction-level design activities are: (1) detailed geologic mapping; (2) subphase-specific geotechnical investigations; (3) subphase-specific slope stability analyses; and (4) development of a comprehensive Project construction quality assurance (CQA) plan. These areas are described below.

Subphase-specific geotechnical, geologic, and hydrogeologic investigations are planned as part of the construction-level design for each subphase of Eagle Mountain Landfill development. Design issues that will be further addressed during this stage of Project development will include:

- Detailed geologic mapping of all natural and cut slopes influencing each subphase will be conducted prior to construction. One function of the geologic mapping is to identify areas where adverse geologic conditions (e.g., fracture zones, out-of-slope bedding, fault zones, or other geologic discontinuities) could impact slope stability. Any adverse conditions identified during the mapping will be remediated during construction, as necessary. Remedial measures could include scaling (removal) of potentially unstable bedrock wedges or other unstable zones or stabilization of these areas using either structural measures (e.g., rock bolts, soil nailing, or ground anchors) or earthfill. Any required remedial measures will be addressed in the construction plans and specifications prepared for each new subphase.

- Geologic field reconnaissances will also be performed to confirm that the subphase does not include any previously unmapped geologic structures (e.g., faults) that could provide preferential-flow pathways for groundwater past the point of compliance. Should such geologic structures be identified, they will be investigated. Groundwater monitoring-well locations will be adjusted as necessary to reflect the existence of such preferential-flow pathways. If necessary, additional wells will be added to the monitoring well network.

- Geotechnical investigations of each subphase area will be used to investigate the extent of alluvial and debris flow deposits. The geotechnical investigations will address the compressibility and collapse potential of alluvial materials and calculations will be performed to estimate the resulting total and differential settlements within each subphase. The potential for impacts to the containment system from these total and differential settlements will also be evaluated for each new subphase during the construction-level design. If the evaluation reveals a potential for significant impact on the performance of the containment system, the construction specifications for that subphase will contain requirements for excavating unsuitable foundation materials and replacing them with compacted engineered fill.

- Site-specific stability analyses of each slope in each subphase of development will also be analyzed during the construction-level design of each subphase. Field data will be obtained during construction-level design activities. At that time, site-specific geologic data (e.g., joint and shear orientations) will be incorporated into the geotechnical cross sections used for analyses of each slope. The results of these analyses will be presented in the design documentation prepared for each new subphase and submitted to the RWQCB for review and approval.

The construction-level design activities also will include the development of a comprehensive landfill CQA plan. The CQA plan will include provisions that require CQA personnel to confirm and document that various elements of the landfill are constructed in accordance with the plans and specifications. The CQA plan will also require monitoring, testing, and documenting liner system construction, and will provide a mechanism for identifying and correcting any observed problems. Over the past several years, CQA programs of the type described have become a standard part of municipal solid waste landfill construction projects. Provisions for CQA at the Eagle Mountain Landfill are provided in the RWQCB WDRs.

Phase 1. Phase 1 will start in the western end of the landfill. An area of about 319 acres will be graded, lined, and filled as this phase of the landfill is constructed. Liner elevations in Phase 1 will range from about 1,660 feet above sea level (based on the national geodetic vertical datum of 1929) at the lowest collection sump area to 2,750 feet above sea level at the upslope northern end of the phase. Final cover elevations in Phase 1 will reach 2,750 feet above mean sea level. Interim waste slopes during the filling of Phase 1 will be up to 400 feet high at inclinations of up to 2H:1V (27 degree slope) measured for the horizontal. Final cover slopes will be approximately 1,000 feet high at an average inclination of 3.5H:1V (16 degree slope). Construction, filling, and progressive implementation of Phase 1 closure are expected to occur over a 17-year period.

Phase 2. Phase 2 of the Eagle Mountain Landfill will occupy an area of approximately 312 acres immediately east of Phase 1. Liner elevations in Phase 2 will range from about 1,540 feet above sea level at the lowest sump area to about 2,620 feet above sea level at the upslope northern end of the phase. Final cover elevations in Phase 2 will reach approximately 2,750 feet above sea level. Interim waste slopes during the filling of Phase 2 will be up to 400 feet high at inclinations of up to 2H:1V. Final cover slopes in Phase 2 will be about 1,000 feet high at an overall inclination of 3.5H:1V. Construction, filling, and progressive implementation of Phase 2 closure are expected to occur over an 11-year period.

Phase 3. Phase 3 of the landfill development will occur in a plan area of approximately 703 acres immediately east of Phase 2. Liner elevations in Phase 3 will range from about 1,060 feet above sea level at the lowest sump area to about 2,420 feet above sea level at the upslope northern end of the phase. Final cover elevations in Phase 3 will rise approximately 2,550 feet above sea level. Interim waste slopes during the filling of Phase 3 will be up to 400 feet high at inclinations of up to 2H:1V. Final cover slopes in Phase 3 will be about

1,300 feet high at an overall inclination of 3.5H:1V. Construction, filling, and progressive implementation of Phase 3 closure are expected to occur over a 31-year period.

Phase 4. Phase 4 of the landfill development will occur immediately northeast of Phase 3. Phase 4 will cover a plan area of approximately 534 acres. Liner elevations in Phase 4 will range from about 1,030 feet above sea level at the southeast edge of the phase to about 2,000 feet above sea level at the upslope northwest corner of the phase. Final cover elevations in Phase 4 will rise approximately 2,120 feet above sea level. Interim waste slopes during the filling of Phase 4 will be up to 400 feet high at inclinations of up to 2H:1V. Final cover slopes in Phase 4 will reach heights of about 700 feet. Final cover slopes will have average inclinations of 3.5H:1V. Construction, filling, and progressive implementation of Phase 4 closure will occur over a 19-year period.

Phase 5. Phase 5 of the landfill development comprises most of the East Pit. Phase 5 will be situated southeast of Phase 3 and south of Phase 4. Phase 5 will cover a plan area of about 289 acres. In addition, Phase 5 disposal operations will also extend over portions of Phases 3 and 4. Liner elevations in Phase 5 will range from about 940 feet above sea level in the western portion of the phase to about 830 feet above sea level in the eastern portion of the phase. The final cover slope in Phase 5 will reach heights of just above 2,200 feet and will be inclined at an average of 3.5H:1V. Construction, filling, and progressive implementation of Phase 5 closure will occur over a period of approximately 39 years.

2.1.6.2 Grading

Each subphase of the landfill site will be graded as an initial step in construction of the liner system. Grading is intended to provide a firm, stable subgrade capable of supporting landfill structures, as required by §2530.(d) of the California Code of Regulations, Chapter 15. Landfill grading activities will include: (1) clearing and grubbing, (2) excavation to achieve design foundation grade elevations, (3) subgrade preparation, and (4) placement of engineered fill.

Materials that are inappropriate for construction, and that would not provide suitable support of landfill structures, will be cleared, grubbed, and removed. Inappropriate materials include vegetation, man-made debris and structures, and organic materials.

Excavations will be performed to achieve the foundation grade elevations and to reach firm subgrade materials. Materials to be excavated will range from loose soils to very hard bedrock. The majority of the existing soil and rock materials present at the landfill site will be reusable as engineered fill. Engineered fill will be placed: (1) to achieve the design foundation elevations and contours (grades); (2) to provide a smooth, stable surface for construction of the landfill; and (3) as components of the landfill liner, cover systems, or surface water management systems.

Final grading will be performed as part of the closure activities. Final waste layers will be placed to achieve the design final grade elevations prior to the placement of the final cover and final surface water drainage controls.

Additional discussion about grading and other landfill construction considerations, such as mitigation of unstable slopes or compressible or collapsible soils, is provided in Appendix B.

2.1.6.3 Construction of Ancillary Facilities

Ancillary facilities will be constructed before landfill operations begin. These facilities include the truck marshaling yard and the upper rail yard, which are located in Landfill Planning Area 2 and contain the existing rail spur to facilitate efficient phasing of landfill operations. Maintenance and administration buildings are existing onsite structures. The Eagle Mountain Railroad and Eagle Mountain Road will also be upgraded or reconstructed before the landfill operations begin. Drainage ways and onsite haul roads will be developed as the landfill progresses. The surface water monitoring system and landfill gas monitoring system will be installed at the same time.

2.1.7 Landfill Operations

This section describes the operational aspects of the proposed landfill, including waste transport to the site and to the active working area, the support facilities, and the environmental monitoring at the landfill. Landfill operations at the Eagle Mountain Landfill will consist of daily activities and periodic activities. An overview of these activities is given below. Although landfilling of the waste will occur 6 days per week for up to 16 hours each day, waste could be transported to the facility 24 hours per day, 7 days per week. During inactive times (8 hours per day, Monday to Saturday; and 24 hours per day, Sunday and holidays), all waste will be covered with a minimum of 6 inches of daily cover. Operations will begin in the southern end of Phase 1 and move north in this phase over the first 10 to 20 years. Over the life of the facility, the operations will generally move from the west (Phase 1) to the east (Phase 5), with the easterly portion of Phase 5 being the last area filled.

Waste accepted for disposal at Eagle Mountain Landfill will consist of nonhazardous municipal solid waste, which is regulated as Class III waste under California landfill regulations. Class III waste can include paper and cardboard, green waste, plastic, food waste, metal, glass, wood, and textiles. It also includes nondecomposable inert solids such as dirt, concrete, rock, and other construction material. With increased implementation of recycling attributable to Assembly Bill (AB) 939 provisions, the major components of waste disposed of at Eagle Mountain Landfill are anticipated to be nonrecyclable paper, comprising 13 to 27 percent of the waste stream, miscellaneous waste (14 to 22 percent), food waste (6 to 16 percent), and plastics (5 to 10 percent). No bulk high-liquid-content wastes (i.e., waste defined as having a moisture content exceeding 40 percent) or hazardous wastes will be accepted at the landfill.

When required, personnel will use appropriate eye, ear, hand, and foot protective gear. Site managerial staff will be responsible for staff supervision, efficient operation, and compliance with all permit requirements and regulatory permitting. Staff will be specifically trained for the following functions: weighing, screening, and inspecting incoming waste; waste unloading, compaction, and covering operations; maintaining and repairing equipment; operating the landfill gas collection and removal equipment; documenting the operation; monitoring the environmental monitoring equipment; and applying daily cover to the waste.

Operation of the landfill will require the use of heavy mobile construction-type equipment for the intermodal yard, the truck marshaling yard, the railroad, the landfill, and for construction, inspection, and monitoring. Landfill operation also requires the construction of the proposed railroad spur. Standby electrical generating equipment will be located onsite to facilitate operations in the event power is temporarily lost to the site. Equipment will be maintained through normal maintenance procedures or major repairs.

2.1.7.1 Access to the Landfill Site

Truck Transport to the Landfill. Transfer trailers will gain access to the landfill site via Eagle Mountain Road and the last 2 miles of Kaiser Road north of the Townsite. The transfer trailers will be directed towards the entrance in Planning Area 2, where the manifests will be presented to the gate/scale operator and the transfer trailers weighed. The transfer trailers will then proceed to the truck marshaling yard. Here, the trailers will be uncoupled, and the trucks will pick up an empty trailer to return to the originating MRF or TS. Hostling vehicles will hook up to the loaded trailers and haul them to the landfill working face along the South Haul Road and temporary roads on the landfill.

Local waste will enter the facility via Kaiser Road or Eagle Mountain Road at the southern part of Planning Area 2. Both local haul trucks and self-service vehicles (i.e., cars, trucks, trailers) will be directed to the local waste receiving facility where the vehicles will unload the waste. The waste will be sorted and inspected, then loaded into a transfer trailer or container. When filled, the transfer trailer or container will be hauled to the landfill working face via the South Haul Road. When daily waste delivered to the landfill site reaches 10,000 tpd, the local waste receiving facility could be moved to Planning Area 3.

Rail Transport to the Landfill. Trains arriving at the landfill facility will come into the Planning Areas 2 or 3 rail yards. Overhead cranes or mobile equipment will unload the containers of waste and set them on chassis arranged along the rail yard tracks. A representation of the type of crane used in typical offloading operations is shown in Figure 2-17. The cranes or mobile equipment will then load empty containers onto the train cars. The trailer holding loaded containers will be hauled by hostling vehicles to the landfill working face via the South Haul Road. During this operation, the train locomotives will either disconnect from the train and reconnect to a train carrying empty containers and/or refuel. The train will then leave and transport the empty containers back to the MRF or TS.

Intermodal Rail Yards. All waste entering the landfill site by train will be received at one of two planned intermodal rail yards. The primary rail yard (Rail Yard I–see Figure 2-5) will be located in Planning Area 2 at the same location where the iron ore was loaded on rail for shipment during the period of full-time iron ore mining. After refurbishing the existing rail yard and adding 6,600 feet of track, this rail yard will be able to handle approximately 8,000 tpd (an average of 2.3 trains per day) of waste. Existing rail facilities in Rail Yard I consist of several rail spurs, a locomotive maintenance building, and fueling and sanding facilities. The proposed landfill encompasses the use of the three incoming tracks of the existing yard, the removal of the loadout facility, and a transition to an expanded upper yard consisting of five parallel tracks. These facilities will be refurbished or reconstructed to meet current design and regulatory standards.

When waste by rail exceeds the capacity of this upper yard (i.e., 8,000 tpd), a secondary rail yard (Rail Yard II–see Figure 2-6) will be constructed in Planning Area 3. These two yards can be used concurrently. The ultimate total capacity of the yards will be 18,000 tpd (which is about five trains fully loaded), although it will be built in stages as waste flow increases. Overhead intermodal cranes or mobile equipment will be used to unload loaded containers and reload empty containers (see Figure 2-17). When landfilling operations are initiated, two cranes will be used. This will increase to 8 to 10 cranes to handle 18,000 tpd. Hostling vehicles (semitractors with chassis) will be stationed on roadways adjacent to the railcars. Containers will be placed directly on the empty chassis for transport to the landfill working face. If a hostling vehicle is unavailable, the container will be placed next to the roadway for staging. Empty containers will be reloaded onto railcars for transport back to the MRF or TS.

Truck Marshaling Yard. Up to 2,000 tpd of waste could be delivered via truck haul to the truck marshaling yard at the landfill. Waste from areas other than the Chuckwalla Valley will be shipped by transfer trailer (i.e., trucks that haul containers). The waste will arrive via Eagle Mountain Road at Interstate 10 and enter the landfill site at Planning Area 2 or Planning Area 3 during later stages of development. A gate house and a set of scales will be constructed at the main entrance. All transfer trucks will be directed to the truck marshaling yard. This yard will consist of approximately 15 acres of crushed rock surfaced with calcium lignosulfate sealant to control dust. Trucks delivering waste will drop off full containers and pick up empty containers for transport back to the MRF or TS. Hostling vehicles will then haul the chassis with the loaded container to the landfill working face for disposal. This facility will be equipped with minor maintenance facilities to facilitate drivers performing minor repairs and general maintenance.

2.1.7.2 Waste Inspection Facility and Process

Local Waste Receiving Facility. Vehicles carrying waste originating from the Chuckwalla Valley will be directed to the local waste receiving facility. Initially, this facility will be located in Planning Area 2; as the other site operations expand into Planning Area 3, this facility would be expanded and/or relocated. Local-area vehicles will be directed to this area

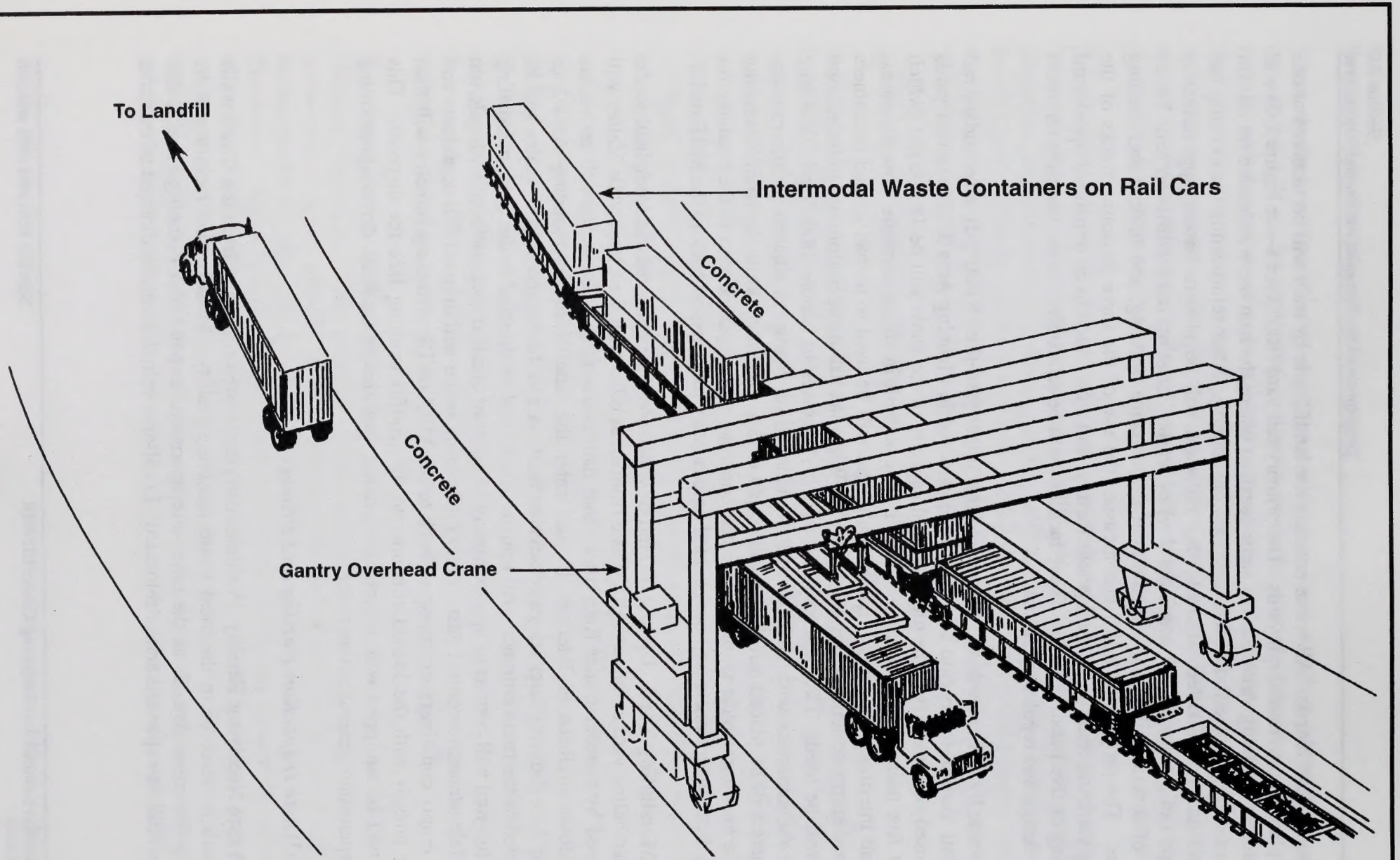


Figure 2-17
Typical Offloading Operation
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

by the gate house employee. Here the vehicles will be unloaded into a container surrounded by a retaining wall and litter control fence. Designated recyclables will also be unloaded at this locale for temporary storage. This container will be covered and transferred to the landfill where the waste disposal will occur. It is anticipated that waste arriving at this area will total fewer than 10 tpd. Recyclable material will be stored in designated containers in this area pending shipment to a larger recycling storage facility or market.

Waste Inspection Process. The waste disposal process includes inspection of waste at three points before disposal. As it is picked up from residences or commercial facilities (and generally inspected), it is loaded into vehicles for transport to disposal facilities. First, the waste will be inspected at a MRF or TS before and during loading into intermodal containers or transfer trailers. Waste processing at the MRFs and TSs will entail inspection, screening, and removal of unacceptable waste (e.g. hazardous waste). In addition, MRFs will screen the waste and separate recyclable materials. Noncomplying waste will be removed and temporarily stored onsite prior to removal from the site for proper handling and disposal or treatment. Recyclables will be recovered from the waste stream, and the remaining waste will be loaded into enclosed or covered containers for shipment. After sorting and screening, waste will be loaded into transfer trailers or shipping containers by top loading, or in some cases by end loading. All shipping containers and transfer trailers will be totally enclosed or covered prior to shipping to the landfill.

Second, the containers will then be inspected at the rail yard or truck marshaling yard of the proposed landfill as the containers arrive by train or by truck. Suspicious containers or containers that have a broken inspection seal will be taken to a designated waste inspection area adjacent to the landfill working face for unloading and inspection prior to disposal, or the containers may be shipped back to the MRF or TS of origin without unloading. A portable instrument will be used to check containers for emission of radioactivity. Third, at the landfill working face, randomly selected containers or containers suspected of containing noncomplying waste will be directed to the special inspection area in the landfill for unloading and inspection.

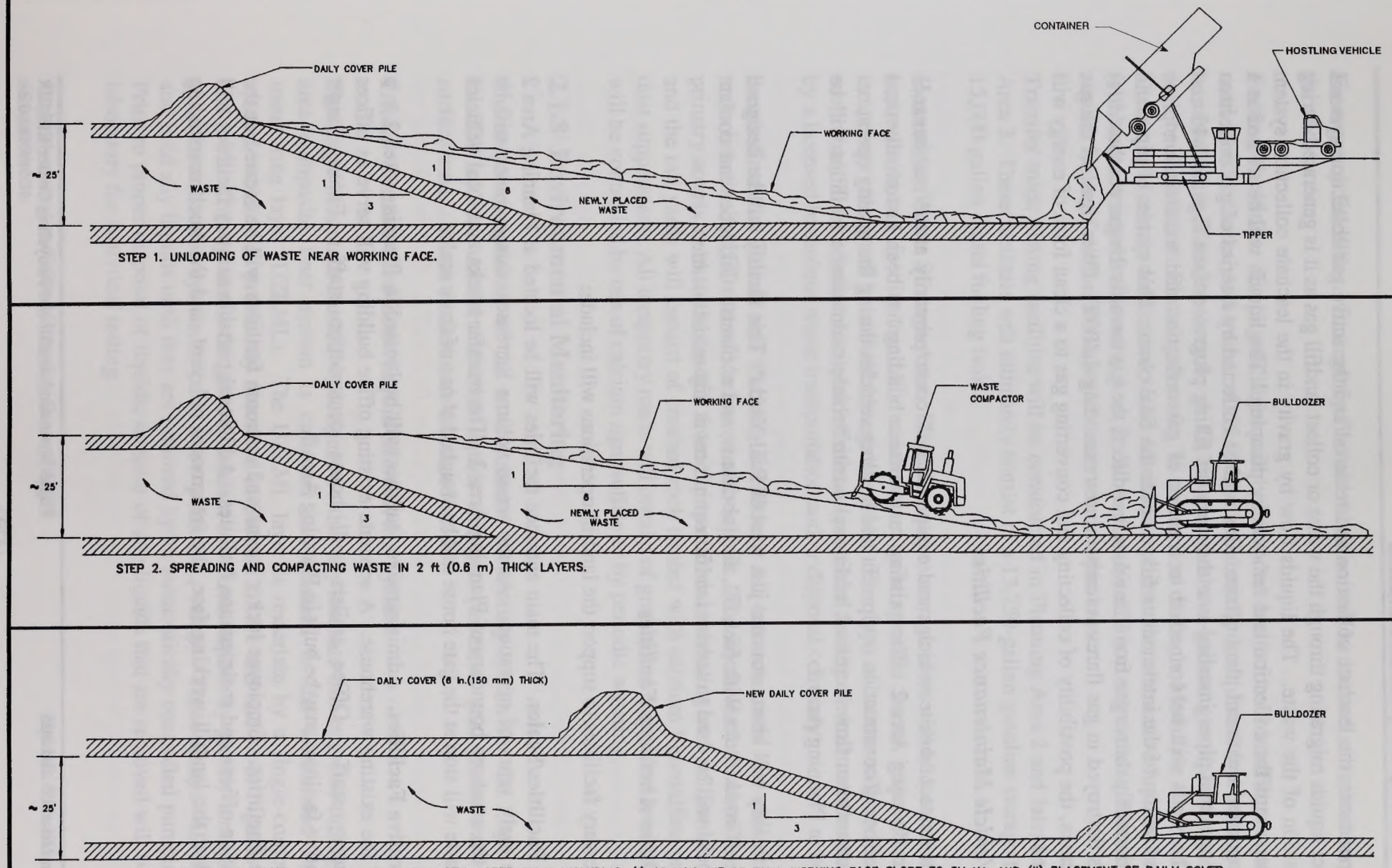
Additional inspection of the waste will take place during the disposal process itself, by trained tipper and heavy equipment operators. Inspection for noncomplying material occurs as the waste is unloaded from the transport containers and as it is being spread and compacted on the working face. Noncomplying waste will be transported and temporarily stored at a special area at the local waste receiving facility. This waste will be inventoried, reported, returned to its origin, or shipped to a proper facility for disposal or treatment.

Local area waste will be delivered to the local waste receiving facility of the landfill by garbage trucks or private trucks and cars. This waste will be unloaded; inspected; and, where appropriate, recyclables or noncomplying waste will be removed. The waste will then be transported to the landfill working face for disposal. Recyclables will be temporarily stored at the local waste receiving facility prior to shipment by truck or train to facilities handling large volumes of recyclables.

2.1.7.3 Daily Operations at the Active Working Area

At the landfill working face, the hostling vehicles will enter the working face where they will be directed to a hydraulic tipper. The hostling vehicles will back the chassis or trailers onto the tipper platform, disconnect, and pull forward. The inspection seal on the containers will be broken and information such as container number, date, and time will be logged by an inspector. The process of depositing and compacting waste at the landfill is shown in Figure 2-18. The cover will be removed and/or the door(s) will be opened on the trailer or container. The tipper operator will then raise the tipper and empty the waste from the container or trailer. As the waste is emptied, the landfill compaction equipment will spread and compact the waste in layers approximately 2 feet thick. The waste will be compacted on previously placed and compacted wastes, interim cover, or the protective soil layer of the liner. The tipper will be lowered and the hostling vehicle will back onto the platform and reconnect to the trailer or chassis for transport back to the rail yard or truck marshaling yard. The waste will be inspected by landfill personnel for the presence of material that does not comply with the types of waste accepted at the landfill. If such material is discovered, landfill operators will segregate it; and the questionable waste will be further inspected and removed.

At the conclusion of each day, after the waste is compacted, a 6-inch layer of compacted soil for daily cover will be spread on the waste at a rate to keep lightweight waste from becoming airborne and to control rainfall infiltration and potential vectors. Intermediate cover layers of soil compacted to a minimum thickness of 12 inches will be applied to areas that are inactive for more than 180 days. Litter will be controlled four ways. First, the waste generally will be compacted and covered with soil or more waste within 60 minutes of placement at the active working area of the landfill. Second, portable litter control fencing (15 to 25 feet high) will be placed along the downwind side of the active working face of the landfill to prevent litter from leaving this area. Third, workers will patrol the perimeter of the landfill working face and the areas downwind from the landfill working face to collect any litter that gets through or over the litter control fence. The number of workers required to collect litter will be based on specific conditions (e.g., if winds are strong, more workers will be assigned to litter control). Wind conditions and forecasts will be monitored at the landfill. In the event of strong winds, the number of workers assigned for litter control will be increased. A "strong wind" is one that precludes the litter control fencing, by itself, from containing litter from blowing from the active landfilling area. The number of workers will be increased from the proposed four to five litter control staff to as many as necessary to keep litter from blowing from the active area. If the litter patrol workers cannot keep litter from blowing away from the active area, landfilling will be temporarily suspended and all trash will be covered with daily cover until the wind condition has diminished. Any trash that might have blown from the active working face of the landfill will be retrieved. Fourth, the active working face of the landfill, which is the area that actually receives waste, will be limited to no more than 2 acres.



Not to scale

Figure 2-18
Typical Daily Operations at Active Working Areas
Eagle Mountain Landfill and Recycling Center EIS/EIR

During operations, the leachate collection and removal and the active gas collection systems will collect liquids migrating through the waste or collect landfill gas as it is generated during decomposition of the waste. The liquids flow by gravity in the leachate collection system toward the sumps for collection and removal by pumping. The liquids will be treated at a publicly operated treatment plant offsite. Gas will be collected by a series of gas collection wells or horizontal pipes installed into the waste as filling progresses (see Figures 2-13 and 2-14). The wells will be connected to a series of gas collection and transmission pipes constructed on top of the intermediate fill or under the final cover. This system of pipes and wells continuously draws gas from the waste and directs the gas towards the gas combustor(s) where it is destroyed in gas flares at temperatures exceeding 1,400°F. Over time, as the gas flow increases, the possibility of collecting and converting gas to a clean form of energy will be reviewed.

2.1.7.4 Vehicle Maintenance Facilities

The maintenance of onsite vehicles and equipment will occur primarily at the maintenance building in Planning Area 2. The existing maintenance building has been historically used for repair of heavy construction equipment and hostling vehicles during the mining operation. As the waste stream flow increases, additional onsite vehicle maintenance facilities will be constructed in Planning Area 3.

A service facility will be constructed just west of Rail Yard I. This facility will be designed to service off-road trucks with fuel, oil, air, lubricants, and coolants. Oil, lube, and coolant service trucks will be used to service landfill equipment at any onsite location.

2.1.7.5 Other Ancillary Facilities

Other necessary facilities to support the landfill operations will include:

Entrance Facilities/Scales. The main entrance facilities will be located at Planning Area 2 during the early years of operation. As the waste volume increases, this entrance will be moved to the southern boundary of Planning Area 3. The transfer trucks and local vehicles hauling waste will stop at the gate house and be weighed at one of three scales.

Administrative Facilities. Administrative facilities will be located in Planning Area 2 in a portion of the existing warehouse. A separate existing office building will serve as offices for regulatory staff. Office trailers will house construction staff. Future, larger administrative facilities may be built in Planning Area 3.

Employee Facilities. Employee locker rooms and restroom facilities will be located at the administrative offices and maintenance facilities. Additional portable sanitary facilities will be located at the landfill working face, the intermodal rail yard, and the truck marshaling yard.

Emergency Facilities. Emergency first aid facilities will be located at various locations on the site.

Fueling Facilities. Fueling facilities will be provided onsite for all landfill equipment, off-road transfer trucks, and trains. A 55,000-gallon above-ground diesel fuel storage tank will be installed in Planning Area 2. A 13,750-gallon, above-ground gasoline storage tank will also be installed in Planning Area 2. If conversion of Eagle Mountain Railroad trains to alternative fuels is determined to be feasible, a permanent, alternative-fuel fueling facility will be constructed in Planning Area 2. When Rail Yard II is constructed in Planning Area 3, similar fueling facilities will also be constructed in this area.

Transfer truck fueling facilities will be constructed in Planning Area 2 and later in Planning Area 3. These facilities will ultimately consist of a 13,750-gallon gasoline storage tank and a 15,000-gallon diesel fueling tank.

Hazardous Waste Storage Area. Hazardous waste storage areas will be located in the local waste receiving facility near all maintenance buildings and waste inspection areas for temporary storage of household hazardous waste. This type of waste will be stored for no more than 90 days before transport offsite to a permitted facility for treatment and/or disposal by a licensed hazardous waste transportation and/or disposal company.

Access/Internal Roads and Parking Facilities. All entrance roads and nontruck parking areas into the landfill site will be paved with asphalt. The South Haul Road will serve as the primary access road to the landfill from the two truck marshaling and rail yards. This road and the rail yards will consist of crushed rock treated with calcium lignosulfate or a similar dust suppressant. All temporary roads will consist of graded and compacted onsite soil. Dust will be controlled by use of calcium lignosulfate or by periodic watering.

2.1.8 Environmental Monitoring

The major components of the environmental monitoring system for the Eagle Mountain Landfill address unsaturated zone liquids and gas, perimeter gas, groundwater, air, and surface water. These elements are discussed below.

2.1.8.1 Unsaturated Zone Liquid Monitoring System

The Eagle Mountain Landfill is designed so that any leachate that migrates through the base area composite liner system is collected and retained in the unsaturated zone liquid monitoring layer (UZLML). The UZLML layer is underlain by a single-composite liner system, which was previously described in Section 2.1.5.1 and shown in Figures 2-9, 2-11, and 2-12. This system is designed to contain and direct liquids by gravity through a porous granular collection system towards a low point (i.e., sump). These sumps will then collect and hold any liquids until they are removed by an automatically controlled pumping system. Prior to proper disposal of liquids, samples of any liquids that are removed will be sent to a laboratory for analytical testing.

2.1.8.2 Unsaturated Zone Gas Monitoring System

The Eagle Mountain Landfill will be underlain by an unsaturated zone gas monitoring system (UZGMS), situated below the UZLML, that can detect and remove very small quantities of landfill gas that could migrate through the liner system. The system will consist of a series of small-diameter pipes that end with perforated zones at points under the landfill. These monitoring points will be constructed generally on 10-acre spacings immediately beneath the entire liner system. From these points, a conveyance pipe will extend towards the perimeter of the landfill. At the perimeter, a vacuum can be pulled onto the pipe to draw a continuous flow of air from beneath the landfill. A sample of this air can then be tested in the field and/or in the laboratory to determine if landfill gas is present. If gas is detected, the active LFG extraction system can be adjusted to increase the gas flow from a particular area of the landfill and inhibit migration through the liner system.

2.1.8.3 Perimeter Landfill Gas

Landfill gas monitoring will be implemented using a series of LFG monitoring probes placed around the perimeter of the landfill boundary. Monitoring probe spacing and depth have been selected to conform with SCAQMD and CIWMB guidelines. A total of 63 gas monitoring probe clusters will be installed at a spacing of approximately 1,000 feet (300 m). The depth of probes will be at least equal to the depth of waste within 1,000 feet (300 m) of the probe or to a depth of 30 feet (9 m), whichever is greater. Monitoring results will be reported in accordance with the requirements of §17783 of Title 14 or as directed by the CIWMB, Local Enforcement Agency (LEA), or SCAQMD.

2.1.8.4 Groundwater

A groundwater monitoring system will be constructed around the perimeter of the landfill. This system will consist of a series of upgradient and downgradient monitoring wells that extend from the ground surface into the upper zone of the groundwater beneath the site. The 9 upgradient wells will provide an indication of background water quality, while the 25 downgradient wells will provide an indication of any changes to the water quality that may have occurred due to an escape of liquids or gasses from the landfill. At 3-month intervals, the monitoring wells will be sampled for certain indicator parameters. The results of the sampling will then be submitted to the regulatory agencies.

2.1.8.5 Air

As part of the air monitoring, SCAQMD Rule 1150.1 mandates that, on a day-to-day basis, the landfill operators conduct the following sampling to detect hydrocarbons emitted from the landfill: (1) integrated-surface and instantaneous-surface sampling of the landfill and (2) ambient air sampling. Furthermore, as required by SCAQMD Rule 403, MRC will perform ambient air monitoring for fine particulate matter at two locations to determine impacts during construction and operational phases of the landfill. In addition, as required by

the SCAQMD New Source Review (NSR) program, MRC will perform annual source tests on the landfill gas flares to determine criteria and toxic air emissions for these sources. The NSR permits will also require that the operating temperatures and landfill gas flow rates of the flares be monitored and recorded on a continuous basis.

2.1.8.6 Surface Water

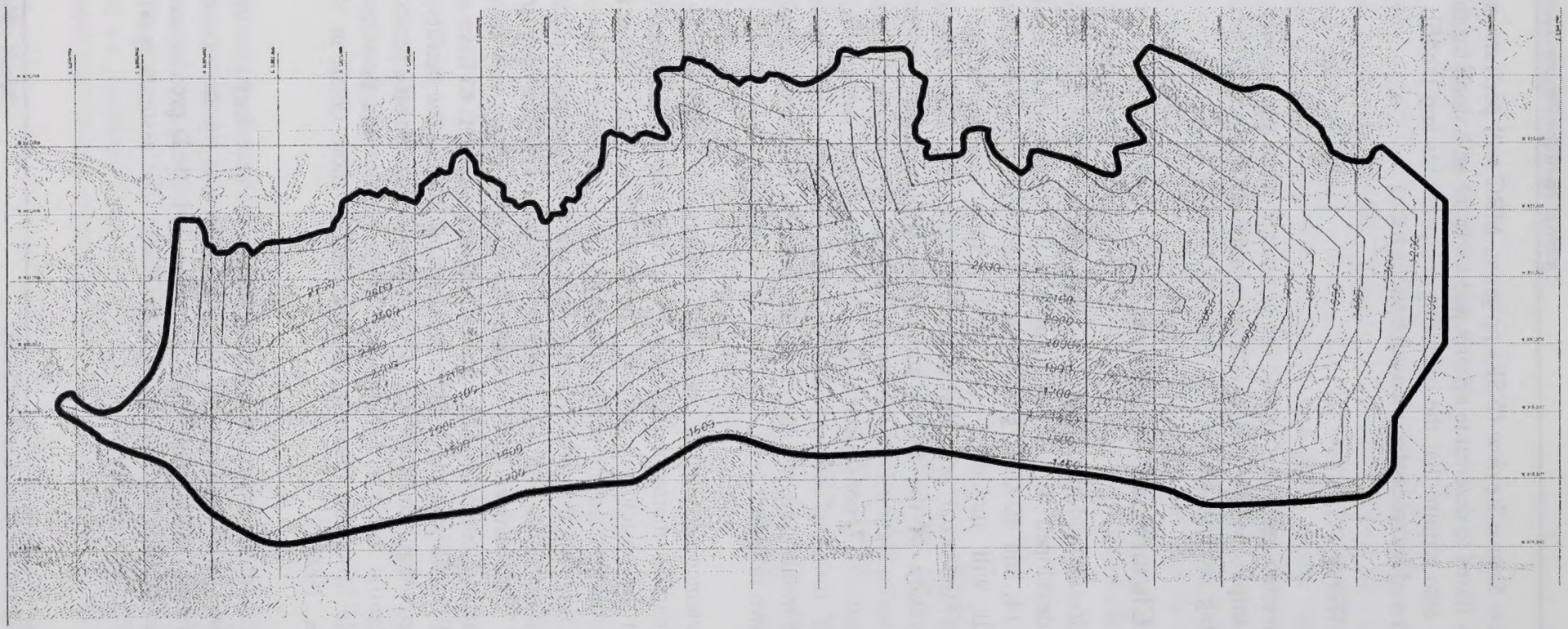
Surface water converted in ditches around the perimeter of the site will be monitored during rainfall events. Samples will be collected from a series of monitoring stations and sent to a laboratory for testing and analysis.

2.1.9 Landfill Closure and Postclosure

Plans outlining closure and postclosure maintenance activities for the Eagle Mountain Landfill will be developed to meet applicable requirements of Article 8 of Chapter 15, Article 7 of Title 14, and 40 CFR §258.60 and §258.61. Closure activities at the Eagle Mountain Landfill will include: (1) final grading, (2) placement of final cover, (3) construction of the final portions of the leachate and LFG management systems, (4) continued operation of the LCRS and leachate management system, (5) continued operation of the active landfill gas recovery system, (6) continued operation of the gas management system, (7) construction of final surface water drainage controls, (8) construction of the final erosion and sediment controls, (9) removal of structures, (10) continued site monitoring, and (11) final site security and access. The final contours of the landfill are shown in Figure 2-19.

Postclosure maintenance activities at the Eagle Mountain Landfill will be conducted for a minimum of 30 years to maintain the integrity of the various engineered systems at the landfill throughout the postclosure period. The CIWMB and LEA have responsibility for determining when the postclosure maintenance period is complete. The state and federal laws require funding of the anticipated postclosure maintenance costs for 30 years. California regulations (CCR, Title 14, Division 7, Section 17788(a)) require that qualifying closed landfills be "...maintained and monitored for a period of not less than thirty (30) years after the completion of closure..." As a result of the requirements to have set-aside funding, the proposed landfill will have these funds set aside as long as the facility is in postclosure maintenance. Federal regulations require the postclosure maintenance period to be as long as wastes pose a potential threat to groundwater. The closure and postclosure maintenance plans for the Eagle Mountain Landfill are described in more detail in Section 12 of the ROWD (GeoSyntec, 1992).

To ensure that sufficient funds are available to perform the necessary closure and postclosure maintenance activities, MRC will provide funding assurances (in the form of a trust fund or other approved financial mechanism), as required by Subtitle D provisions implemented by the Regional Water Quality Control Board (RWQCB). The assurances will be established prior to the start of landfill operations.



N

0 2000

scale in feet

Figure 2-19
Final Contours of the Landfill
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

2.2 No Action Alternative

The No Action Alternative would leave the Eagle Mountain iron-ore mine site in its present condition, and the landfill would not be developed. The limited mining-related activities associated with the former mining operations would be maintained. The existing mining reclamation plan (Kaiser Steel Corporation, 1978) would be implemented (see Section 1.1.1). The East Pit and surrounding piles of overburden rock and mine tailings would remain at the former mine site. Southern California communities would continue to rely on existing, expanded, or other new landfills. The No Action Alternative would leave the Townsite in its present condition, and no further renovation beyond existing approved uses would occur. The rights-of-way would not be issued, and the land exchange between the BLM and Kaiser would not occur.

2.3 Reduced Volume of Onsite Disposal Alternative

This alternative would allow for the disposal of up to 16,000 tpd of waste including up to 14,000 tpd by rail and up to 2,000 tpd by truck. The maximum number of trains hauling waste to the site would be decreased from 6 trains to 4 trains per day. Under these operating conditions, the total daily capacity of the landfill would be reduced by approximately 20 percent compared to the proposed Project. The landfill operating conditions would be similar to the proposed Project. Waste would be received initially at TSs and MRFs in the seven-county wasteshed area. After sorting, the waste would be shipped via rail or truck to the landfill site. Waste from the Chuckwalla Valley would be direct hauled to the landfill. The liner system, leachate collection system, monitoring system, and cap closure would be similar to the proposed Project. The rights-of-way would be issued, and the land exchange between the BLM and Kaiser would occur. Activities associated with the Townsite would remain the same as the Proposed Action.

2.4 Alternate Road Access Alternative

Under this alternative, transfer trucks would use the existing Kaiser Road to bring waste to the site instead of the existing Eagle Mountain Road and its proposed extension. All other features of the proposed action would remain the same. The existing Kaiser Road is located approximately 3 miles east of Eagle Mountain Road, and extends approximately 10 miles to the landfill site from Interstate 10. Use of Kaiser Road instead of Eagle Mountain Road is not as direct a route to the landfill for transfer trucks arriving from counties west of the landfill. This would result in an additional 7.5 miles round trip for each truck because most of the waste for disposal at the landfill is anticipated to originate in areas and counties to the west of the landfill. Because Eagle Mountain Road would not be used, no new construction of the proposed Eagle Mountain Road extension would occur. All other landfill activities of the proposed Project would remain the same. The proposed renovation and repopulation of the Townsite would proceed as in the Proposed Action. The railroad right-of-way would be issued, and the land exchange between the BLM and Kaiser would occur.

2.5 Rail Access Only Alternative

This alternative would eliminate the use of all non-Chuckwalla Valley and Blythe area refuse-hauling trucks to the proposed site, resulting in a reduction in the capacity of the landfill to 18,000 tpd. All other landfill activities of the proposed Project would remain the same. This alternative would preclude transporting waste by truck from the Blythe area and the Coachella Valley area of Riverside County. The proposed renovation and repopulation of the Townsite would proceed as in the Proposed Action. The railroad right-of-way would be issued, and the land exchange between the BLM and Kaiser would occur.

2.6 Landfill on Kaiser Land Only Alternative

This alternative would allow for operation of the proposed landfill without implementing the proposed land exchange between the BLM and Kaiser. There would, however, be a modified land exchange involving the reversionary interest in the 465 acres surrounding, and including, portions of the Townsite, and the proposed rights-of-way would still be implemented. The landfill would comprise only Kaiser-owned lands in and around the East Pit (Phase 5 of landfill development under the Proposed Action). The landfill footprint, which is shown in Figure 2-20, would cover an area of 289 acres and would accept a maximum of 10,000 tpd of municipal solid waste. A lower rail yard east of the landfill would not be built. Landfill design, development, operation, environmental monitoring, and closure and postclosure would be as described for the Proposed Action in Sections 2.1.4, 2.1.5, 2.1.6, 2.1.7, and 2.1.8. This alternative would result in BLM maintaining their title to the previously mined lands and Kaiser transferring only a small portion of the open space lands to BLM.

All of the lands that would be used for the landfill under this alternative are currently owned by Kaiser, with the exception of an inholding located in Section 36 of Township 3S, Range 14E comprising approximately 20 acres, which are administered by the BLM. This 20-acre area is covered by an unpatented mining claim owned by Kaiser and known as the Sunrise, or Flat #1, mining claim. Under federal law (*Washington v. Lynam*, 45 Land Department 593 [1916]), if Kaiser releases its mining claim over this area while the land is still under federal ownership, the ownership of the parcel will automatically transfer to the State of California by operation of law as part of the school land grant in Section 36, under the administration of the State Lands Commission.

Under the Proposed Action, this parcel is included in the lands proposed to be transferred by the BLM to Kaiser in the land exchange. If the land exchange is approved and consummated, the school land grant to the State of California will not be applicable to this parcel because the parcel will no longer be under federal ownership. The alternative landfill configuration,

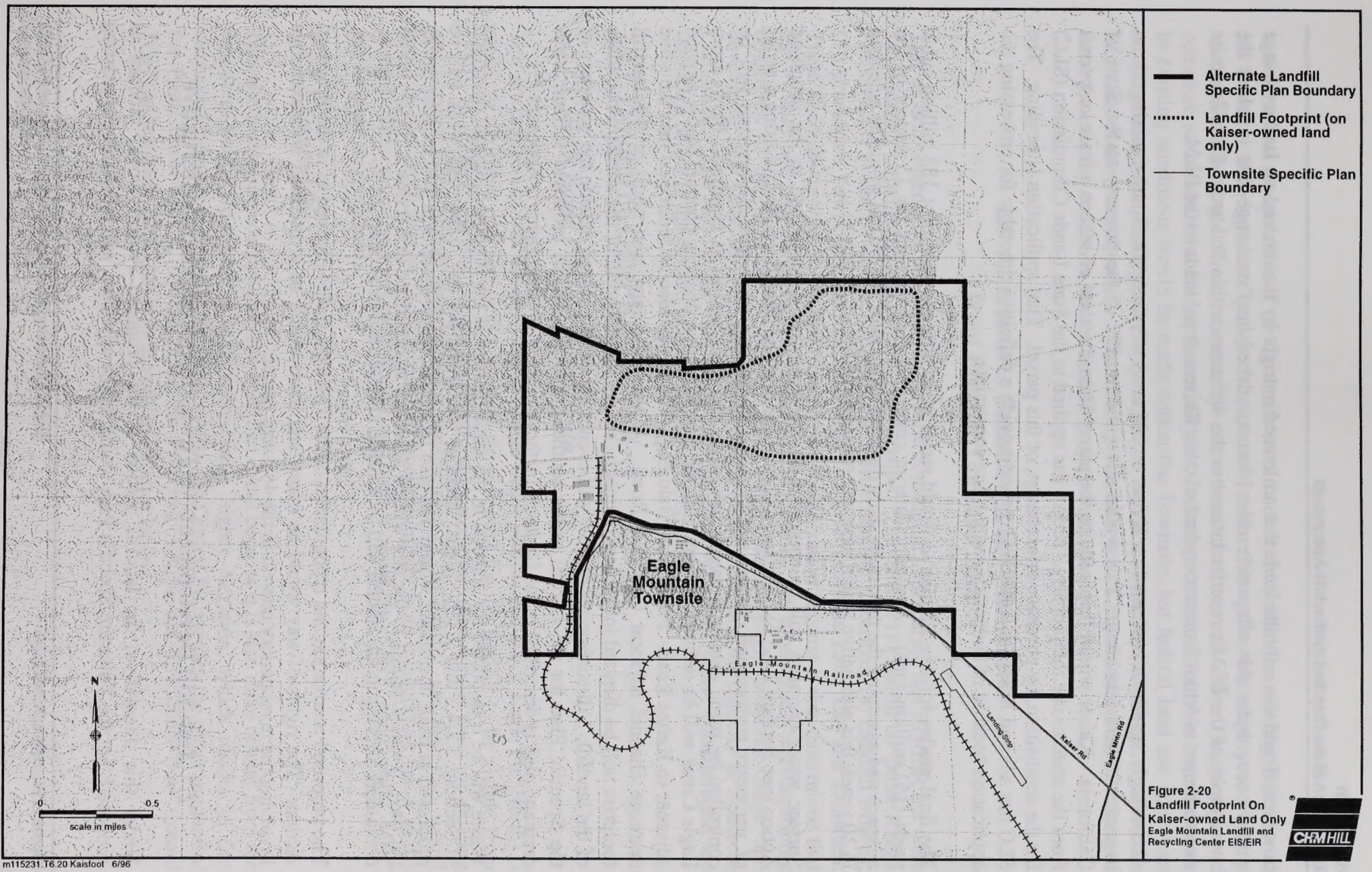


Figure 2-20
Landfill Footprint On Kaiser-owned Land Only
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2MHILL

m115231.T6.20 Kaisfoot 6/96

however, would use only the lands that are owned outright by Kaiser, and no land exchange would occur under this alternative other than a reduced land exchange that involves the conveyance of the BLM's reverter interest in the 465 acres within and around the Townsite area to Kaiser in return for a conveyance of other Kaiser-owned lands to the BLM.

Accordingly, under this alternative, Kaiser would need to release its Sunrise mining claim over the 20-acre inholding. This would allow the transfer of the property to the State of California. Kaiser would then acquire the parcel from the state or secure a lease or permit from the state to use the property. Kaiser has applied to the State Lands Commission (SLC) for the acquisition, by purchase or exchange, of this parcel. That application is pending. The SLC has advised Kaiser that the SLC cannot provide a definitive timetable for processing the application because of budgetary and staffing constraints.

The final grades for this alternative would result in an airspace of almost 183 million cubic yards (151 million tons). Assuming interim cover materials account for 15 percent of the airspace and assuming the maximum daily disposal capacity of 10,000 tpd would be achieved in 10 years, this alternative would have an estimated site life of 39 years.

Surface water drainage will be controlled in the same way as described in the Proposed Action (see Section 2.1.5.6). Surface water will be diverted around the landfill using a series of perimeter conveyance ditches and swales. Flows that are potentially erosive will be controlled by using detention basins, hay bales, and other means, as required. Flows from Eagle Creek will be redirected away from the East Pit into a drainage channel that is aligned adjacent to Kaiser Road. Flows from Bald Eagle Creek will also be redirected into the same drainage channel adjacent to Kaiser Road. A small drainage area north of the landfill footprint will be directed into a new drainage channel located north of the northern boundary of the landfill. All surface water flow will eventually be discharged outside the boundary of the Specific Plan for the landfill to the southeast and east. (The proposed surface water drainage plan is described in the *Updated Surface Water Hydrology Report*, Appendix F.)

Waste will be transported for disposal in the same manner as the Proposed Action, described in Sections 2.1.4.2 and 2.1.7. A maximum of four trains per day, 6 days per week will be processed at peak operation. Waste will also be hauled by no more than 100 transfer trucks per day. Vehicle access to the site will be achieved as described in Section 2.1.4.2. Waste containers arriving at the landfill will be handled as described in Section 2.1.7.

The proposed renovation and repopulation of the Townsite would proceed as in the Proposed Action. The rights-of-way would be issued and there would be a modified land exchange involving the reversionary interest in the 465-acre parcel.

2.7 Landfill Development/No Townsite Development Alternative

Under this alternative, the landfill portion of the proposed Project would proceed as proposed; but the Townsite Specific Plan would not be approved, and renovation of existing

structures and repopulation of the Townsite would not occur within the existing Townsite (a No Townsite Development Option). It is assumed under this option that employees working at the landfill, Eagle Crest, community correctional facility, and other facilities would commute to the site from Desert Center, Blythe, and other communities. No improvements to existing conditions would be made within the Townsite, but federal land use approvals would proceed (i.e., the rights-of-way would be issued and the land exchange between the BLM and Kaiser would occur). The existing Townsite would remain essentially unchanged from the existing condition, but the landfill project would be developed.

2.8 Alternatives Considered but Eliminated from Further Consideration

This section presents the alternatives that were considered in preparing this EIS/EIR but were subsequently eliminated from further consideration. They are: (1) Landfill on Other Kaiser Property, (2) Waste Diversion, (3) Proposed Offsite Landfill Locations, (4) Landfill Mining, (5) Alternative Townsite Locations, and (6) Alternative Townsite Land Use and Densities. These alternatives were eliminated from further consideration because it was determined that they would not provide reasonable and feasible methods for substantially accomplishing objectives of the proposed action (i.e., reclaiming Kaiser's Eagle Mountain Mine and developing new Class III nonhazardous municipal solid waste landfill capacity in Southern California). The reasons for eliminating these alternatives from further consideration are discussed below in the context of each eliminated alternative.

2.8.1 Landfill on Other Kaiser Property

2.8.1.1 Black Eagle Pits (North and South)

This alternative site was not analyzed in further detail because the Black Eagle Pit (North) is closer to the ridge line and would increase the potential for the landfill to be visible from JTNP. In addition, the Black Eagle Pit (South) is located more than 4 miles from the existing and planned infrastructure supporting the development of the landfill, and therefore, would result in cost inefficiencies and increased air quality impacts from transporting waste to the landfill. These pits also overlie the Pinto Basin, which drains into JTNP, additionally, MRC has no lease on these lands.

2.8.1.2 Central Pit

This alternative site was not analyzed in further detail because it is also more distant from the proposed Rail Yard II and is at a substantially higher elevation, which results in this alternative being economically infeasible. Also, the Central Pit overlies the upper reaches of the Pinto Basin aquifer, which, unlike the Proposed Action, has directional flow toward JTNP; additionally, MRC has no lease of these Kaiser lands.

2.8.2 Waste Diversion

Waste diversion, which comprises recycling, municipal solid waste composting, and source reduction, is currently taken into consideration in the proposed Project because the Eagle Mountain Landfill will not accept waste from jurisdictions that are not in compliance with the waste diversion requirements of AB 939. This alternative assumes that by exceeding the waste diversion mandates of AB 939 (see Section 1.3.2.1), the amount of waste requiring disposal would be reduced to a level that would allow for existing capacity to meet the disposal needs of the seven-county wasteshed area served by the Eagle Mountain Landfill. Although waste diversion programs reduce the waste stream by diverting waste from landfills, these programs would not remove the need for landfill capacity available from new or expanded landfills in Southern California. Despite ongoing efforts of municipalities to meet or exceed the existing AB 939 goals, a variety of unknown and highly variable factors (e.g., reliable markets for recyclables, cost-effectiveness of new recycling/disposal technologies, shipping and transportation costs, public education about source reduction) are potentially volatile, unknown costs that are external to the goal of waste diversion.

Similar to recycling and source reduction, municipal solid waste composting assumes that composting reduces the amount of waste that would be landfilled, and, therefore, would assist communities by meeting or exceeding the waste diversion mandates of AB 939 (see Section 1.3.2.1). This also assumes that the amount of waste for disposal would be reduced to a level that would allow existing capacity to meet adequately the disposal needs of the seven-county wasteshed area served by the Eagle Mountain Project.

Organic composting is a fermentation process in which microbes decompose organic materials into a compost for agricultural and horticultural use. Although composting occurs on different operational scales (e.g., from individual garden composting to large-scale for-profit enterprises), this EIS/EIR discusses composting in the context of a large-scale commercial facility that is capable of maximizing the efficiencies associated with economics of scale, such as the Bedminster technology proposed for use in the Coachella Valley.

Compost is produced both from sewage sludge and from municipal solid waste. The typical process entails the use of a digester, which extracts organic materials from the waste to produce a humus that can be used as topsoil. The first step in the process of composting solid waste is to separate oversized and unacceptable items (e.g., mattresses, car batteries) before loading the municipal solid waste into a digester. The remaining inorganic materials are separated for recycling or landfilling. Next, the digester converts the biodegradable organic component of the waste into compost using microbial activity. After removing the compost from the digester and separating the organic material from inorganic material, the compost undergoes a curing process that takes approximately 4 to 6 weeks. During this time, the composted material is aerated to facilitate the curing. The composted material undergoes a final screening and is then ready for marketing.

Although composting programs reduce the waste stream by diverting waste from landfills and potentially reduce the environmental impacts associated with landfills, composting would not

eliminate the need for landfill capacity from new or expanded landfills in Southern California. Despite the ability of the composting process to convert municipal solid waste into topsoil, the technology is highly market-sensitive. Demand for the product is not consistent, is subject to available markets, and is affected by conditions external to the composting technology (such as shipping, transportation, and facility construction costs). Although composting is a viable and important process for contributing to the waste reduction objectives of AB 939, it is not a viable replacement for the waste disposal capacity of the proposed Project and would not satisfy other Project objectives; therefore, it is not a feasible alternative to the proposed Project.

The City of Palm Springs is considering a waste composting type of facility to handle some of its disposal needs, but it would have a maximum capacity of less than 1,000 tpd. Even if all cities and unincorporated county areas in Southern California comply with AB 939's waste diversion requirements by the year 2000, the total daily waste disposal needs of Southern California could reach 105,000 tons by the year 2050, based on projections provided in the counties' draft countywide siting elements to the year 2010 (see Section 1.3.2) and extrapolation of the counties' growth projections to the year 2050, which represent five or six landfills comparable in size to the proposed Project. For these reasons, composting was considered but removed from further consideration as an alternative. Specific short-, medium-, and long-term aspects of waste diversion and landfill capacity requirements for the Southern California region are discussed in detail in Section 1.3.1.

2.8.3 Proposed Offsite Landfill Locations

During the public scoping meetings, the issue was raised of potentially using other existing or proposed landfills to accommodate waste that would otherwise be sent to the proposed Eagle Mountain Landfill. Scoping comments focused on the following three options: (1) existing County landfills, (2) other remote rail-haul sites and/or large-capacity landfills in the seven-county region (see Section 1.3.2), and (3) out-of-state landfills. These proposals were considered but eliminated as alternatives to the proposed Project. Even with municipalities' full compliance with waste diversion mandates of AB 939 and the potential for permitting new or expanded landfill capacity in Southern California counties, there is still a projected need for capacity to meet anticipated regional long-term waste-disposal needs. These long-term capacity issues are discussed in the Purpose, Need, and Objectives section of this EIS/EIR (Section 1.3). Each of the optional locations is briefly discussed below.

2.8.3.1 County of Riverside Landfills

Riverside County. Overall, Riverside County has adequate total disposal capacity through the year 2008. A shortage could occur, however, before this date because of the limits on daily permitted capacity. Additional capacity could be realized from the proposed expansions at Badlands, Lamb Canyon, Edom Hill, and El Sobrante Landfills. Although these expansions, if approved, would provide the County with sufficient overall capacity in the

medium term, only the El Sobrante Landfill has been authorized to accept waste from out of county (up to 6,000 tpd) contingent on approval of the proposed expansion. In addition, there is a geographical disparity in landfill capacity (i.e., adequate capacity in the western County of Riverside and inadequate capacity in the eastern County of Riverside). The Coachella Valley area of the County could experience a shortfall of landfill capacity as early as the year 2002. The CVAG is evaluating its options for long-term waste disposal, including disposing of waste at the Eagle Mountain Landfill, if this facility is developed.

2.8.3.2 Other Remote Rail-Haul Landfills in California

Specific proposed sites are Rail Cycle/Bolo Station Landfill in San Bernardino County and Mesquite Landfill in Imperial County. Like the proposed Eagle Mountain Project, these two landfills are rail-haul sites located in remote, sparsely populated desert areas of Southern California. If approved and constructed, these proposed landfills could help to meet the region's long-term need for municipal solid waste disposal capacity, thereby helping to achieve one of the objectives of this proposed action. As noted previously, however, these proposed landfills are not true alternatives to the Eagle Mountain Project for purposes of NEPA and CEQA, because they either do not meet the Project objectives or are not within the jurisdiction of the County. Instead, they are considered to be potential cumulative impacts, in recognition of the fact that three or more regional landfills could collectively impact natural resources within the Southern California desert. For that reason, these other regional landfills are discussed in this EIS/EIR primarily in Section 5, Cumulative Impacts.

Although the proposed regional landfills have been eliminated from detailed consideration as alternatives, and are discussed in detail elsewhere in this EIS/EIR, this section does contain a discussion of these proposed actions, including a comparison in Table 2-5 that highlights the relevant differences and similarities of the three proposed regional landfills. This information together with the EIS/EIRs for the other two proposed regional landfills, is presented to facilitate comparisons of the three landfill projects by interested agencies and members of the public. These landfills are discussed here to provide a comparative basis for discussing cumulative effects in Section 5.

Mesquite. The Mesquite Regional Landfill project is summarized below. A detailed description of the Mesquite project is available in the EIS/EIR for that site (BLM and County of Imperial, 1994).

The Mesquite Landfill site is located to the north of state route (SR) 78 in eastern Imperial County, approximately 20 miles west of Arizona and 20 miles north of Mexico. The site is in open desert adjacent to the active Mesquite Gold Mine and Ore Processing facility. The project involves a land exchange with the BLM, an amendment to the CDCA Plan (BLM, 1980), and rights-of-way for a railroad spur and a gas pipeline. The landfill is estimated to have a disposal capacity of 600 million tons, with an operating life of 100 years. The initial rate at which waste will be received at the landfill is 4,000 tpd, with a maximum rate of 20,000 tpd. The site occupies approximately 4,250 acres of land, of which approximately

Table 2-5
Comparison of Eagle Mountain, Mesquite, and Rail Cycle/Bolo Proposed Landfills and La Paz Landfill (Impacts After Mitigation)

Environmental Issue	Eagle Mountain	Mesquite [1]	Rail Cycle/Bolo Station [2]	La Paz [3]
GROUNDWATER	• Cumulative impacts related to groundwater overdraft	Not Significant	• Extraction of additional annual average of 130 acre-feet of water will be a significant, unavoidable, adverse impact because the aquifer is considered to be in overdraft.	Not Significant
PUBLIC HEALTH AND SAFETY	Not Significant	Not Significant	Not Significant	Not Assessed
TRAFFIC	Not Significant	• Cumulative impact potential to winter recreational traffic on SR 78 at the Imperial Sand Dunes Recreational Area	Not Significant	• The flow of traffic would be stopped twice a day to accommodate the railroad; the maximum wait for travelers would be approximately 5 minutes.
AIR QUALITY	• Cumulative impacts cannot be completely reduced to below a level of significance due to increase in emissions from motor vehicles, locomotives, and heavy equipment.	• Cumulative impacts to air quality for PM_{10} from criteria pollutants generated by flare station • Potential fugitive dust emission impacts generated by vehicles traveling on paved and unpaved roads and from operation areas of the working face and cover borrow areas	• PM_{10} emissions cannot be entirely mitigated; this results in a significant, unavoidable, adverse impact. • NO_x and ROG emissions cannot be entirely mitigated; this results in a significant, unavoidable, adverse impact.	Not Significant
LAND USE	Not Significant	Not Significant	• The proposed action would represent a modification of the existing rural. low-intensity use of the site to an intensive, industrial-type use.	• The proposed action would impact approximately 600 acres of federal lands.
SURFACE WATER	Not Significant	Not Significant	Not Significant	• Disturbance may contribute sediment to surface water flows. • Impacts to approxi-mately 0.8 acres of jurisdictional waters of the U.S.

Table 2-5
Comparison of Eagle Mountain, Mesquite, and Rail Cycle/Bolo Proposed Landfills and La Paz Landfill (Impacts After Mitigation)

Environmental Issue	Eagle Mountain	Mesquite [1]	Rail Cycle/Bolo Station [2]	La Paz [3]
BIOLOGICAL RESOURCES	• The loss of the Kaiser mine adit for bat roost habitat is a significant impact that cannot be mitigated.	Not Significant	Not Significant	• The proposed action would result in a loss of approximately 600 acres of Sonoran desert habitat. • No impacts to threatened or endangered species
SOCIOECONOMICS	Not Significant	Not Significant	• Increased employment and population would accelerate consumption of local land and water resources. • The establishment of additional housing in the project area would introduce a concentration of population that currently does not exist.	Not Significant
GEOLOGY AND MINERAL RESOURCES	Not Significant	Not Significant	Not Significant	• 600 acres of disturbance to surface geology and native soils • Associated loss of soil productivity
VISUAL RESOURCES	Not Significant	• Significant unavoidable impact to visual resources due to landform alteration that would result in a strong degree of contrast, impacting public views	• The presence of the landfill will permanently change the visual character of the site. • The illumination of the night sky will also change the visual character of the desert locale.	• Incremental increase in modification to viewshed
WILDERNESS	• No significant impacts to "Wilderness Resources" have been identified. However, due to the subjective nature of the "Wilderness Experience," it is not possible to determine by any objective or quantifiable method if, in any given instance, the "Wilderness Experience" of an individual would actually be affected by the Project.	Not Significant	Not Significant	Not Significant

Table 2-5
Comparison of Eagle Mountain, Mesquite, and Rail Cycle/Bolo Proposed Landfills and La Paz Landfill (Impacts After Mitigation)

Environmental Issue	Eagle Mountain	Mesquite [1]	Rail Cycle/Bolo Station [2]	La Paz [3]
UTILITIES	Not Significant	Not Significant	Not Significant	Not Assessed
NOISE	Not Significant	Not Significant	Not Significant	• Noise levels would increase by two decibels at the site.
CULTURAL RESOURCES	Not Significant	Not Significant	Not Significant	• Disturbance to four historic site properties; three of the historic properties are within the proposed project area and would eventually be destroyed.
PALEONTOLOGY	Not Significant	Not Significant	Not Significant	• Disturbance to four historic site properties; three of the historic properties are within the proposed project area and would eventually be destroyed.
ENERGY	Not Significant	Not Significant	Not Significant	Not Assessed

[1] Information obtained from Mesquite Regional Landfill EIS/EIR, June 1995
[2] Information obtained from Rail Cycle/Bolo Station Final EIR/EIS, August 1994
[3] Information obtained from the La Paz Environmental Assessment, October 1995 (no EIS has been prepared for the La Paz Landfill)

2,290 acres are disturbed lands designated as the landfill footprint. The BLM manages 1,750 acres, which is proposed to be exchanged for 2,242 acres under private ownership in the California Desert Conservation Area. Rail access to the site would be via the Southern Pacific main line to a new 4.5-mile railroad spur at the site. Operation would initially be 100 percent rail, with possible subsequent truck transport of waste from Imperial County.

General construction for the site involves clearing and grubbing, grading and excavation (from 10 to 15 feet below the existing grade), liner installation, access road construction, rail siding construction, pipeline and power line installation, and support facilities construction (e.g., scales and waste inspection facility, rail container handling facilities, rail container storage yard, maintenance facilities, and administrative offices).

The following discretionary approvals and permits apply to Mesquite Landfill:

- Real estate action with BLM, pursuant to FLPMA
- Endangered Species Act (ESA) Section 7 Biological Opinion from U.S. Fish and Wildlife Service (USFWS)
- Clean Water Act (CWA) Section 404 permit from U.S. Army Corps of Engineers (COE) LEA Solid Waste Facilities Permit (SWFP), with which the CIWMB has concurred
- California Department of Fish and Game (CDFG) Biological Opinion and Streambed Alteration Agreement
- RWQCB waste discharge requirements (WDRs) and NPDES permit
- Imperial County Air Pollution Control District permits to construct and operate
- California Department of Parks and Recreation, Office of Historic Preservation, Section 106 review for cultural resources in compliance with National Historic Preservation Act
- Imperial County land use approvals

Rail Cycle/Bolo Station. The Rail Cycle/Bolo Station Landfill project is summarized below. A detailed description of the Rail Cycle/Bolo Station project is available in the EIS/EIR for that site (BLM and County of San Bernardino, 1992).

The Rail Cycle/Bolo Station project site is located in the Mojave Desert in southeastern San Bernardino County, south of I-40 between the towns of Cadiz and Amboy. The Bristol Dry Lake is directly south-southwest of the site. The terrain in the area is generally flat and slopes gently to the south. Existing land to the north and south is largely undeveloped.

The proposed Project includes an exchange of federal lands managed by the BLM, an amendment to the California Desert Conservation Area Plan, and rights-of-way across federal lands. The project is estimated to have a disposal capacity of 487 million tons, and would accept waste at a rate of up to 21,000 tpd after 5 years of operation. The operational life of the landfill is estimated to be 60 to 100 years. The site occupies approximately 4,870 acres of land, of which approximately 2,100 acres would be used for landfilling and 300 would be used for support facilities. The remaining 2,470 acres would be used as a buffer zone. The BLM manages 1,600 acres, which is proposed to be exchanged for 1,920 acres under private ownership in the California Desert Conservation Area.

Rail access to the site would be via the Southern Pacific or Atchison, Topeka, and Santa Fe main lines to a new rail siding at the site. The landfill would operate 8 hours per day, 6 days per week during initial phases. At full capacity, Bolo Station will operate 24 hours per day. When operating at full capacity, up to 7 trains, 40 transfer trucks, and 20 public vehicles will be accepted at the site in a 24-hour period. Each train would carry approximately 3,000 tons of MSW in intermodal-type containers.

General construction for the site involves clearing and grubbing, grading; liner installation; access road construction; rail siding construction; power line installation; and support facilities construction (e.g., scales and waste inspection facility, rail container handling facilities, rail container storage yard, maintenance facilities, and administrative offices).

The following discretionary approvals and permits apply to Rail Cycle/Bolo Station Landfill:

- Real estate action with BLM, pursuant to FLPMA
- ESA Section 7 Biological Opinion from USFWS
- LEA SWFP, with which the CIWMB has concurred
- CDFG Biological Opinion
- RWQCB WDRs
- San Bernardino County Air Pollution Control District permits to construct and operate
- San Bernardino County land use approvals

In March 1996, there were two measures on the San Bernardino County General Election ballot that affected planned development of the proposed Rail-Cycle Bolo project. One was an initiative measure that would have precluded development of the site due to its proximity to usable groundwater resources. The other was a measure seeking to validate a proposed solid waste fee arrangement which was negotiated between the landfill developer and the

County of San Bernardino that would have authorized the contractual levy of landfill fees to be paid to the County of San Bernardino for use in the County's general fund revenues. This financial arrangement to provide the County with substantial landfill-generated revenues, a material consideration in the County's approval process for the landfill, was subject to voter approval as a special tax based on a California Supreme Court ruling.

In the March election, the voters of San Bernardino rejected the initiative measure that would have precluded development of the site due to its proximity to groundwater resources. However, the voters also rejected imposition of the landfill fee arrangement special tax, thus invalidating this proposed financing arrangement. The proposed Rail Cycle/Bolo project is now back before the County of San Bernardino for further consideration in light of the voter rejection of the landfill fee special tax. At this writing, it is not known whether a new special tax measure will be submitted to the voters, or whether the site will continue to be proposed for a regional landfill.

2.8.3.3 Out-of-State Landfills

In addition to the two proposed remote rail-haul landfills discussed above, there are several regional landfills in the western United States that were initially considered as alternatives but eliminated from further consideration. These are La Paz County Landfill and Butterfield Station Landfill, Arizona; the East Carbon Canyon Landfill, Utah; the Columbia Ridge Landfill, Oregon; and the Roosevelt Landfill, Washington. Most of these landfills have large capacities and would be willing to accept waste from Southern California. Although these out-of-state landfills could provide short-term solutions to communities that have no immediate alternative, it is doubtful that they can be considered as a dependable long-term solution to the region's disposal needs because of: (1) uncertainty that these landfills will have adequate capacity to meet the needs of Southern California, (2) the potential for fees to increase significantly, (3) potential revisions to existing and promulgation of new federal laws and regulations that could affect long-term accessibility to out-of-state sites, and (4) political or social opposition to disposing of waste at locations that are not governed by California's environmental review process. The La Paz County Landfill in Arizona is considered in the Cumulative Impacts section of this EIS/EIR (Section 5) because it is operating and accepting waste for Southern California communities by transfer trucks that travel through the County of Riverside.

2.8.4 Landfill Mining

2.8.4.1 General

During the scoping process for this EIS/EIR, landfill mining was suggested as a feasible alternative to the proposed Project to provide adequate waste disposal capacity for meeting waste disposal needs of the County and Southern California. Landfill mining involves excavating material in an existing closed landfill and reclaiming the available cover material; separating potential valuable materials (e.g., ferrous metal, aluminum) and recyclables for reuse or resale; and replacing the remaining materials back into the landfill. Other

components of excavated landfills that cannot be reused or left in a landfill, such as hazardous or radioactive materials, would require disposal at facilities approved to accept hazardous or radioactive wastes. The objective of landfill mining is to: (1) reclaim as much material as possible from existing closed landfills, thus creating new capacity and extending the life of existing landfills and/or (2) remove waste from a site that is causing environmental problems. During the public scoping process for this EIS/EIR, landfill mining of existing, closed sites was raised as a potential alternative to the Proposed Action as a way to provide needed landfill capacity and potentially eliminate the need to develop new landfill sites.

Although landfill mining is implementable under certain, specific conditions that are based on the types of waste mined, the regulatory setting, and the size of the operation, this alternative has been considered and eliminated from further consideration. At this time, although landfill mining might be possible for closing small, poorly sited landfills to recover capacity or to remediate unlined landfills, it is largely impractical as an option for providing regional landfill capacity because of: (1) potential public health concerns (i.e., potential for uncovering of hazardous wastes that were improperly disposed of and potential air quality concerns associated with earthmoving activities); (2) limited application to certain waste types; (3) case-by-case need for documenting known costs; and (4) the associated regulatory permitting and approval process. Although research and pilot projects have been undertaken and have provided valuable research findings applicable to specific landfills, these efforts are preliminary and cannot be applied directly in other settings. The potential capacity created by landfill mining a few sites in the County would not provide sufficient capacity to meet the long-term anticipated shortage in Southern California (see Section 1.3.2.3). In addition, this alternative is eliminated because it would not substantially address the additional objective of the proposed action—reclamation of the Kaiser mine site. Therefore, landfill mining is not a viable alternative to the proposed Project.

2.8.4.2 Materials Conducive to Landfill Mining

The types of landfills and materials most conducive to reclamation are nonhazardous waste landfills, particularly woodwaste disposal sites and waste piles. Woodwaste is targeted for the initial efforts to reclaim landfill space in California because it is relatively clean (compared to MSW and hazardous waste landfill contents) and simpler to process, and has a lower public health threat associated with it. Current estimates of CIWMB are that there are about 40 woodwaste disposal sites and woodwaste piles in Northern California. Landfill mining of more complex MSW projects in California is not considered feasible at this time, and any such projects will require pilot testing of the regulatory process (CIWMB, March 1993).

Prior to more stringent waste disposal legislation (RCRA, Subtitle C and Subtitle D), hazardous waste and liquids were frequently disposed of in landfills (even those designated to receive only MSW). Any effort to mine a landfill must take into consideration the following elements (Metcalf & Eddy, Inc., *How to Assess Your Landfill for Mining: The Cautions.* March 1993):

- Worker health and safety precautions are needed for potential exposure to hazardous waste/radioactivity from mining activities (e.g., rupture of isolated containers, presence of airborne pathogens, venting of gas).

- Human health and ecological risk associated with excavating and removing potentially contaminated waste. Exposed landfills will attract vermin.

- Hazardous waste disposal involves the need to identify environmentally sound alternate disposal options, such as landfilling at facilities permitted to accept hazardous waste or incineration.

- Water supplies include potential for mining at a site near a water source (e.g., old sand and gravel pit, streambed, within the water table) to become contaminated by landfill mining activities and/or the need to obtain valid NPDES permits.

- Leachate management presents the need to define how to capture, treat, and dispose of leachate contaminated by contact with MSW.

- Geotechnical concerns include adjacent structures, depth of excavation, side slope walls, roads, power lines, and other factors during excavation of the landfill.

- Groundwater contamination must be considered part of leachate management. In addition, even if groundwater contamination is not an issue, site dynamics could be influenced by the presence of groundwater. For example, high groundwater conditions in an old quarry could lead to a dewatering problem.

- Nuisance control during excavation includes the presence of odor, noise, dust, litter, truck traffic, and other factors that could result in opposition to mining in certain areas.

2.8.4.3 Regulatory Setting and Permit Requirements

Currently, no federal or State of California regulations have been promulgated specifically for landfill mining. According to the Permitting and Compliance Division of the CIWMB, existing regulations and permitting processes could be applied in certain instances to address landfill mining activities. The CIWMB has expressed concern that the regulatory process for permitting landfill mining is unclear; and questions remain about the specific agencies that would be responsible for issuing permits (i.e., CIWMB, SCAQMD, or other agencies) (CIWMB, March 1993). Specific, applicable California regulations pertaining to landfill mining are:

- California Code of Regulations (CCR) Chapter 5 Articles 3.4 and 3.5 (for landfills operating on or after January 1, 1988

- CCR Chapter 15 (for landfills operating on or after October 1984)

- CCR Chapter 3 Article 7.8 (for landfills not closed by November 18, 1990, or for postclosure land use activities)

- Chapter 15 Section 2510(g) and Public Resources Code Part 5, Article 4 (for corrective action on older sites)

Before existing sites could receive approval for mining activities, several permits and approvals would be required. These include, but are not limited to:

- CEQA review and certification of appropriate environmental documentation
- Regional Water Quality Control Board WDR Permit
- CIWMB Solid Waste Facilities Permit
- SCAQMD

CIWMB cautions that obtaining permits for landfill mining is likely to be costly and time consuming (CIWMB, March 1993) because:

- It is difficult to generalize or predict permit and CEQA requirements for all types of landfill mining. CEQA certification and associated agency approvals (e.g., SCAQMD, EPA, CDFG, COE) and public review and hearings would also be required prior to mining activities being conducted. In addition, obtaining CEQA and agency approvals (if possible) involves unknown costs and time.

- A full-scale mining operation at sites with an existing SWFP and WDR would be considered a significant change to an existing site and would require a revision to these permits for approval prior to initiating mining activities.

- Conflicts with agencies and the public could be major factors because of the potential for multiagency approvals and public hearings.

- For full-scale landfill mining to occur, closure and postclosure maintenance plans would need to be revised and would involve additional agency reviews and approval by CIWMB, the LEA, and the applicable RWQCB. Amendments for closure would be addressed by 14 CCR Article 3.4, Section 18272 and SWFP and WDR permits, which would be revised to reflect elements of the approved final closure plan.

2.8.4.4 Landfill Mining Research and Projects

A number of landfill-mining pilot studies are underway in various parts of the country. This section summarizes two of these preliminary efforts to assess the feasibility of more large-scale landfill mining.

Landfill Mining/Reclamation Research Project, Collier County, Florida. The College of Civil and Mechanical Engineering at the University of South Florida in Tampa conducted a

research program on aspects of landfill mining. The research was jointly sponsored by the Florida Center for Solid and Hazardous Waste Management and Collier County. The research objectives are to make recommendations for accelerating the rate of organic degradation and improving the means and methods for segregating and processing recoverable materials. The initial research began in 1986 with funding from the Florida Governor's Energy Office and was subsequently funded through Collier County, the Florida Department of Environmental Regulation, and EPA. The main conclusions of the research studies are that landfill mining could reduce operating costs of existing landfills, reducing long-term closure maintenance and monitoring costs, and reduce the potential for groundwater contamination from unlined deposits. The research also concluded that maximum benefits of landfill mining might be realized by constructing a system of cells to function as reusable digesters.

Edinburg Landfill Mining Project, New York. Edinburg Landfill is located in Saratoga County in upstate New York near the Adirondack Mountains. The landfill is unlined and has accepted no hazardous or industrial waste in its 20 years of operation. The goal of the project was to reduce the landfill footprint by one acre to reduce closure costs. The methodology focused on using different screening techniques in different phases of the mining to identify cost-effective approaches to reclamation activities. Approximately 15,000 cubic yards of material were screened to achieve the goal of reducing the footprint by one acre. Approximately 125 tons of separated refuse were combusted, 5.5 tons of ferrous were separated and recycled, and 300 pounds of mixed plastics were hand separated for recycling The maximum rate of throughput for a representative day was 1,200 cubic yards. Cost savings at Edinburg were realized by reducing the acreage subject to closure, thereby reducing the closure/postclosure maintenance costs. The study report for the landfill noted that the discovery of hazardous materials or asbestos would, however, result in an unexpected increase in costs.

2.8.5 Alternative Townsite Locations

Other potential locations for accommodating the Townsite were considered but rejected. The infrastructure (roads, sewage treatment system, electric utilities, telephone service, and schools) are already in place within and around the existing Townsite. Relocation or redevelopment of a new Townsite at a different location would generate significant new environmental effects, given the use of energy resources and the creation of air, water, traffic, and other impacts of constructing a new Townsite.

2.8.6 Alternative Townsite Land Use and Densities

A variety of mixed land uses was considered but rejected for the Townsite. Setting aside more land for commercial manufacturing or industrial use would provide more jobs, but would require reducing open space and residential areas. Reducing residential densities could require demolition of some existing homes and homesites and would result in traffic impacts from Townsite construction workers who could not be accommodated at the Townsite.

3.0 Affected Environment

Approximately 13 months have elapsed since the circulation of the Notice of Intent and Notice of Preparation (NOI/NOP) as well as the public scoping meetings for the proposed Project. This Environmental Impact Statement/Environmental Impact Report (EIS/EIR) reflects analysis based on technical information gathered and/or generated in the interim since the previous EIS/EIR was voided and set aside. In many instances, data in the previous EIS/EIR are still valid and, therefore, are either incorporated in full or by reference into this document. In some cases, new information has been generated or existing information has been updated. New information is included to clarify prior analysis.

This section provides the descriptions of the affected environment in the vicinity of the proposed Project, including Eagle Mountain Landfill, Eagle Mountain Townsite and the associated rights-of-way. The resource areas and issues discussed are:

- Groundwater
- Public Health and Safety
- Traffic and Transportation
- Air Quality
- Land Use
- Surface Water
- Biological Resources
- Socioeconomics
- Geology and Mineral Resources
- Visual Resources
- Wilderness
- Utilities
- Noise
- Cultural Resources
- Paleontology
- Energy

3.1 Groundwater Quality and Use

The groundwater environment, both regional and local to the Project site, is directly linked to the geological conditions described in Section 3.9 of this Environmental Impact Study/Environmental Impact Report (EIS/EIR). A thorough understanding of these local geologic conditions, including the hydrogeology of the Project vicinity, has been gained through numerous field investigations conducted in support of both the previous EIS/EIR and subsequent permit requirements (e.g., the Report of Waste Discharge [ROWD—GeoSyntec, 1992] submitted to the California Regional Water Quality Control Board [RWQCB]). These hydrogeologic investigations are documented in various reports identified in Section 3.9 and Appendix C and listed in Section 9, References, of this EIS/EIR.

3.1.1 Regional Groundwater Occurrence and Flow

3.1.1.1 Regional Groundwater Occurrence

The Project site is located within the Basin and Range Geologic Province, a name that refers to the general pattern of alternating valleys (basins) and mountain ranges that characterize the landscape in the southwestern United States. Within this setting, groundwater occurs in both the sediments that have filled the valleys to their current elevations and the bedrock that comprises the surrounding mountains.

Aquifers and Groundwater Basins. An aquifer is that part of a geological formation, or group of formations, that contains sufficient permeable material to yield economical quantities of water to wells or springs (Driscoll, 1986). Conceptually, groundwater basins are hydrogeologic units that contain either one large aquifer or multiple connected or interrelated aquifers (Todd, 1980); however, groundwater can, and typically does, flow across basin boundaries.

The Project site is entirely within the watershed of the 870-square-mile Chuckwalla Valley Groundwater Basin (Chuckwalla Basin), which is shown in Figure 3.1-1. The Chuckwalla Basin is generally flat. Surface-water drainage, which occurs only immediately after heavy rainfall, flows internally within the basin (i.e., no surface flows exit the basin) generally toward the Palen and Ford dry lakes. The basin is bordered by the Eagle Mountains to the west, and the Orocopia, Chuckwalla, Little Chuckwalla, and Mule mountains to the south. Several north-south trending mountain ranges form the northern boundary and extend into the valley; (from west to east, these are the Coxcomb, Granite, Palen, and Little Maria mountains).

The three groundwater basins that surround the Chuckwalla Basin are (see Figure 3.1-2):

- The Pinto Valley Groundwater Basin (Pinto Basin), located north of the Project site

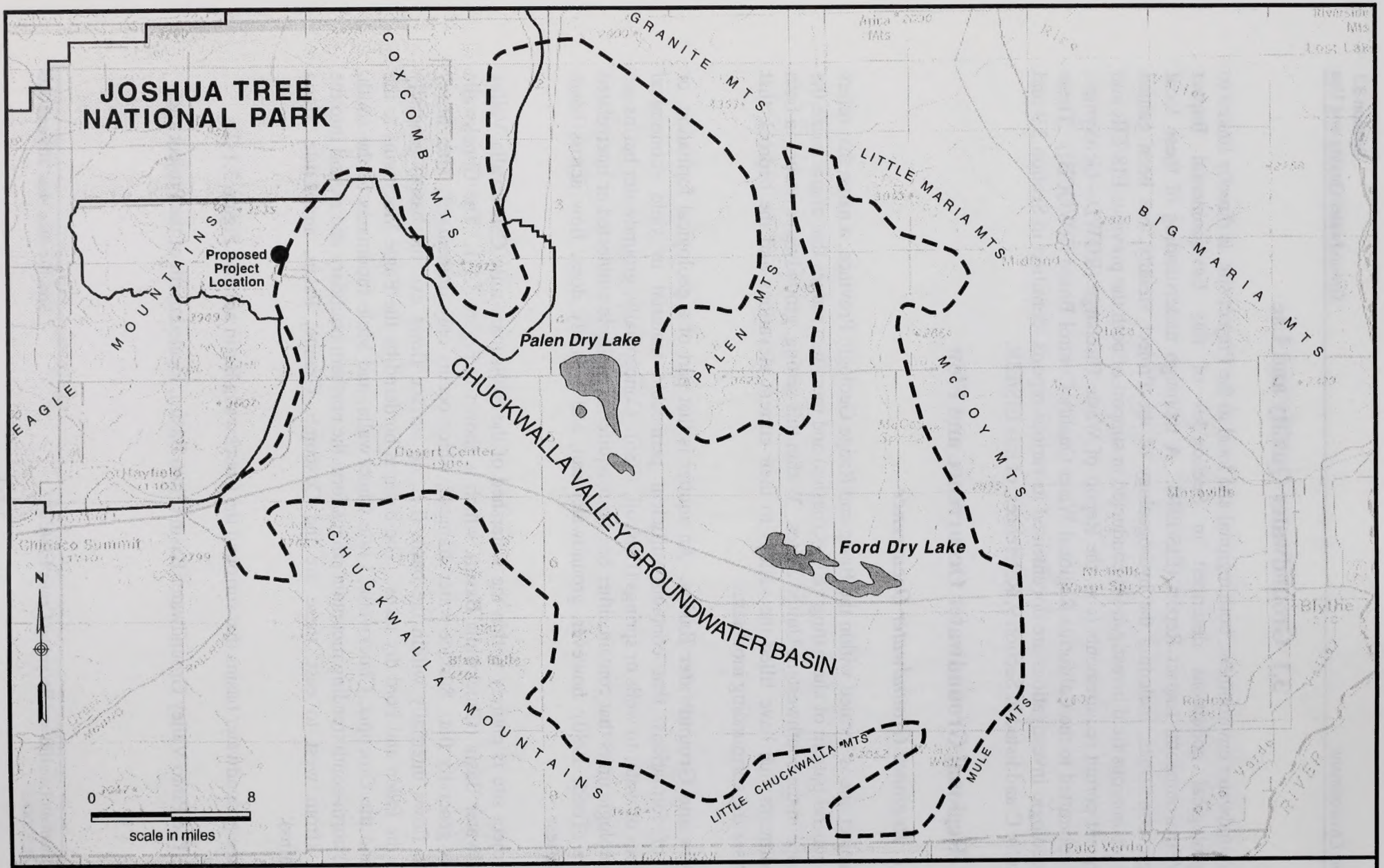


Figure 3.1-1
Chuckwalla Valley Groundwater Basin
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

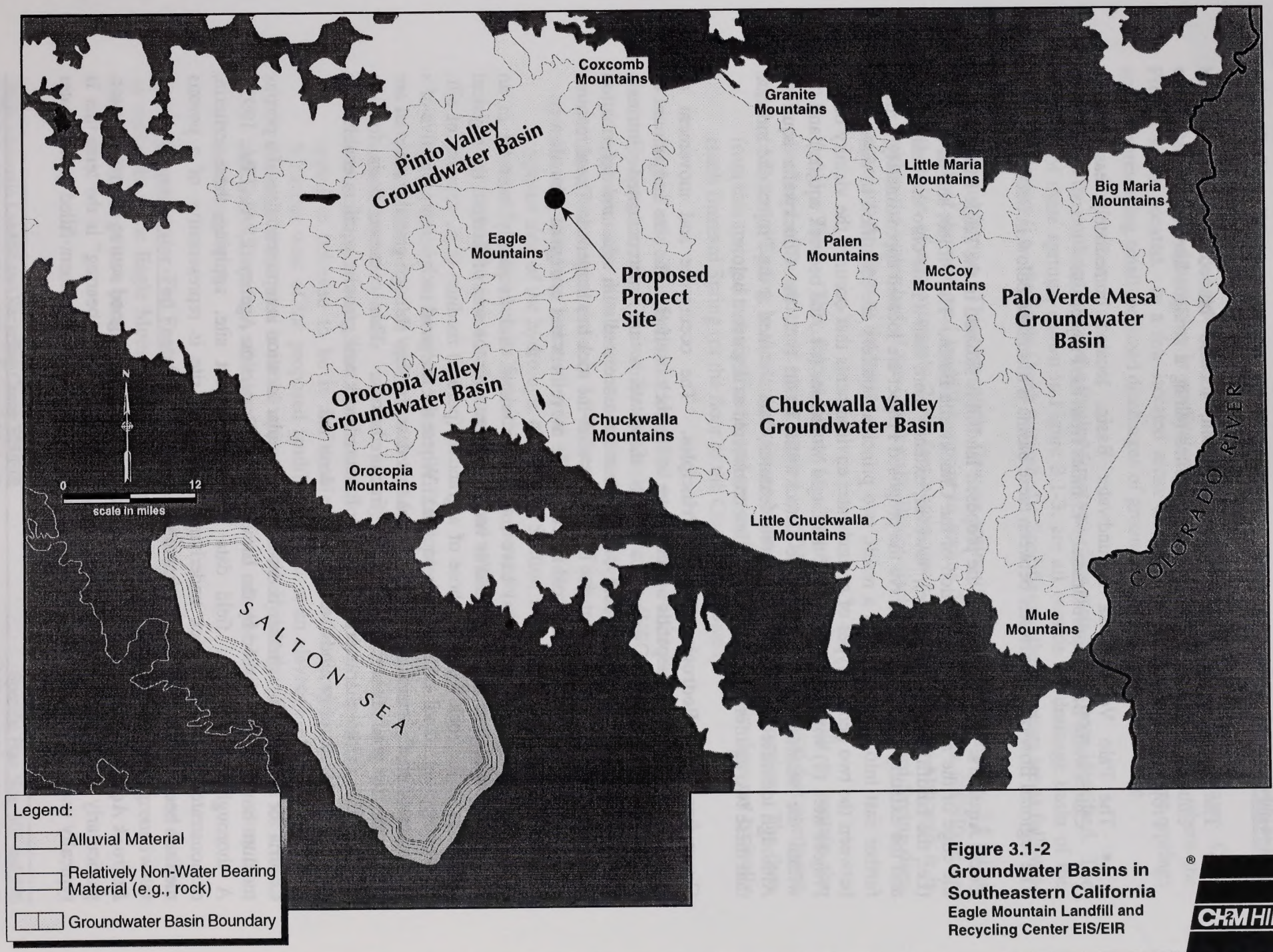


Figure 3.1-2
Groundwater Basins in Southeastern California
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

- The Orocopia Valley Groundwater Basin, located immediately west of the Chuckwalla Basin, approximately 15 miles (along a straight line) southwest of the Project site

- The Palo Verde Mesa Groundwater Basin, located immediately east of the Chuckwalla Basin, approximately 45 miles from the Project site

The regional flow of groundwater between these basins is discussed below in Section 3.1.1.2.

Local Aquifers. The footprint of the proposed landfill is situated in the Eagle Mountains at the edge of the northwestern portion of the Chuckwalla Basin. The Project site as a whole (i.e., the landfill and the Townsite), however, extends more than a mile onto the basin floor, and the existing wells that will serve the proposed Project are located approximately 4 miles further east into the basin. As a result, two principal aquifers are identified to distinguish between the two general types of groundwater environments that occur in the vicinity of the Project site: (1) within the bedrock of the Eagle Mountains (i.e., the bedrock aquifer) and (2) within the saturated alluvium of the Chuckwalla Basin (i.e., the Chuckwalla aquifer). Although identified as separate or discrete features, data obtained at the Project site indicate that these two aquifers are hydraulically interconnected as discussed below.

Groundwater in Bedrock—General Principles. The occurrence and movement of groundwater in bedrock depends on the nature of the rock itself (i.e., the size and amount of voids [porosity] and the extent to which these voids are interconnected [intrinsic permeability]) and, more importantly, on the features associated with structural deformation of the rock (e.g., joints and fractures) that occurs after the rock has hardened. These features form the principal pathways and void spaces for the movement and storage of groundwater.

When these pathways (fractures) have measurable widths and frequently intersect in an essentially continuous horizontal and/or vertical pattern over the area of interest, the physical properties of the rock resemble those of a granular (porous) medium (e.g., deposits of silt, sand and gravel, like the Chuckwalla aquifer). Where the fractured rock is representative of a porous medium, the same physical principles that describe flow through granular material are applicable to groundwater flow in the fractured rock. This common basis for the interpretation of the characteristics of both fractured-rock and granular aquifers enables the potential pathways of groundwater flow to be identified.

Criteria for determining whether bedrock at a particular location is representative of a porous medium have been published by the Environmental Protection Agency (EPA) (EPA, 1991). A thorough evaluation of field data from the Project site, applying these criteria, demonstrates that the bedrock underlying the Project site is representative of a porous medium because the rock is highly fractured (Appendix C-4).

Bedrock Aquifer. Bedrock is typically not considered to be a good source of groundwater, particularly in arid regions where recharge is low. "Non-water bearing" is the term that is typically used to describe bedrock relative to the aquifers of the sediment-filled groundwater

basins, which typically have higher permeabilities and more groundwater in storage. On a regional basis, this description is applicable to the Basin and Range Province where the Project site is located. In a few isolated areas of the Eagle Mountains, however, springs occur, representing small localized discharges of groundwater to the ground surface.

Springs. In the northern half of the Eagle Mountains, four springs have been identified. The locations of these springs, shown in Figure 3.1-3, are all outside the drainage basin of the proposed Project (i.e., the Eagle Creek watershed). Specifically, these springs are as follows:

- Buzzard Spring. This perennially flowing spring is located approximately 2.5 miles south of the proposed landfill footprint in Joshua Tree National Park (JTNP) at an elevation of approximately 2,000 feet above mean sea level (msl). Although it is within the watershed of the Chuckwalla Basin, discharge from Buzzard Spring does not reach the floor of the basin.

- Dengler Tank. This feature refers to a stone wall that was built to contain the discharge of an unnamed spring located in JTNP approximately 2,000 feet northwest of Buzzard Spring in the same drainage basin and at a similar elevation. The flow from this spring is not significant, and any surface water that results does not typically reach Buzzard Spring (or the floor of the Chuckwalla Basin).

- Eagle Tank. This feature is identified as a spring on the Placer Canyon Quadrangle topographic map (United States Geologic Survey [USGS], 1986), and is located approximately 3 miles west-northwest of the proposed landfill footprint at an elevation of approximately 1,840 feet. Eagle Tank is a natural rock depression that contains standing water all year (Harder, 1912). Because Eagle Tank is on the opposite side of the hydrologic divide (see Section 3.1.1.2) from the Project site, any surface flow that results from this feature flows in the direction of the Pinto Basin (i.e., Eagle Tank is not in the same watershed as the proposed Project).

- Cactus Spring. Although it is not specifically identified on the local topographic map (Placer Canyon), this spring has been identified by the National Park Service as a water-resource feature in the vicinity of JTNP (Lewis, Frank; telephone communication with Scott Stonum, National Park Service, September 1995). This spring is believed to be in the area of "Cactus Mine," which is approximately 5.5 miles west of the proposed landfill footprint at an elevation of 2,000 feet. The drainage in this area is on the opposite side of the hydrologic divide from the Project site and is, therefore, tributary to flows directed into the Pinto Basin (i.e., away from the Project site).

Other Groundwater-Fed Features. There are no perennially flowing surface-water features or wetlands in the Eagle Mountains. Apart from the aforementioned springs, groundwater does not discharge on a perennial basis in these mountains.

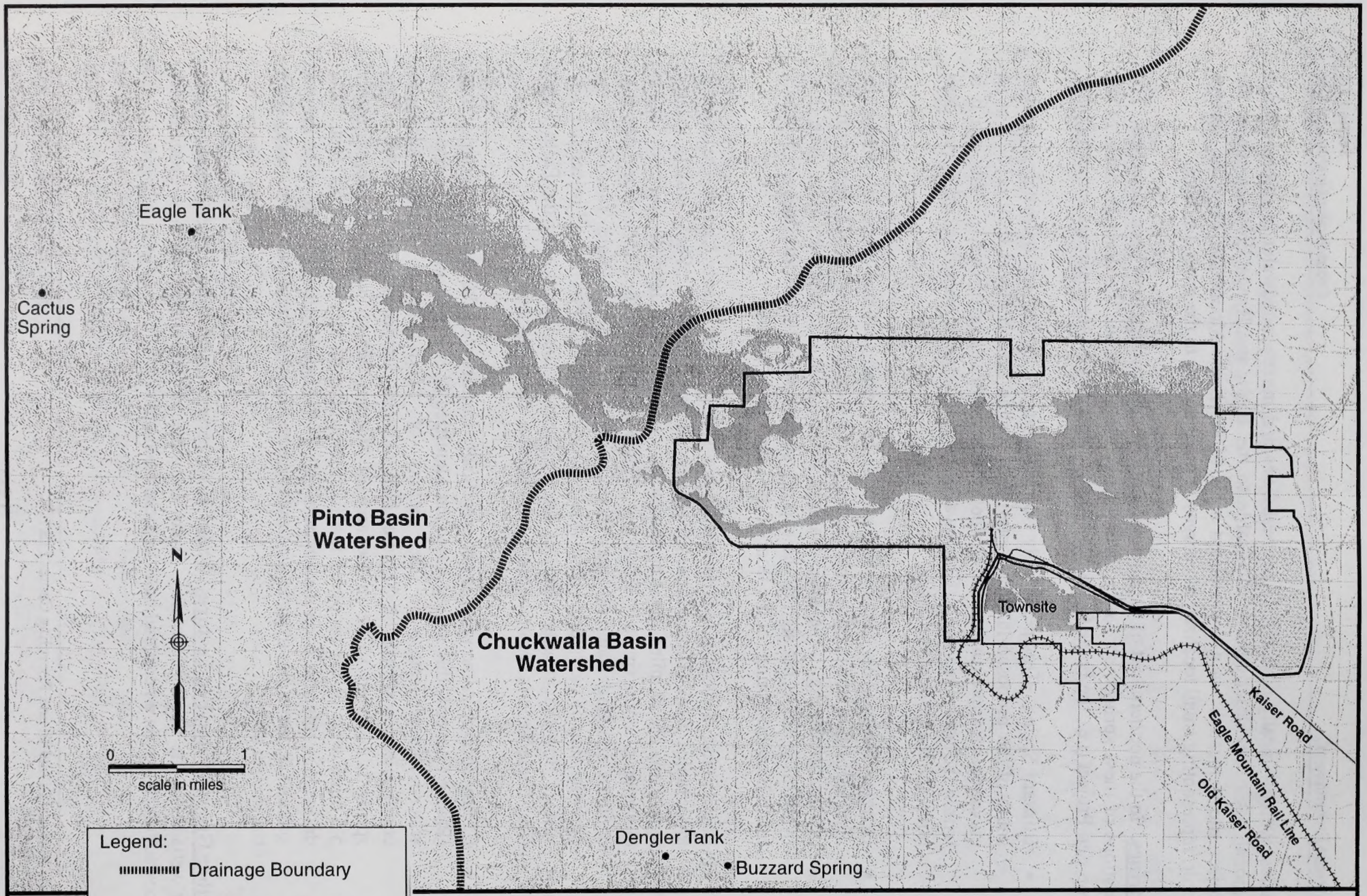


Figure 3.1-3
Springs in the Northern Eagle Mountains
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

Chuckwalla Aquifer. The Chuckwalla aquifer, which consists of the saturated sediments that overlie the bedrock within the Chuckwalla Basin, is a significant regional groundwater resource relative to the bedrock aquifer. The composition of the sediments consists of older alluvium of probable Pleistocene age (up to 1.8 million years old), containing fine to coarse sand interbedded with gravel, silt, and lesser amounts of clay. Recent-aged (up to 10,000 years old) deposits of unconsolidated alluvium and dune sand, and Pleistocene debris-flow material are also present (see Section 3.9). The thickness of the sediments increases toward the center of the basin. In the eastern portion of the basin, the thickness is reported to be more than 2,000 feet (Appendix C-4).

The sediments that comprise the Chuckwalla aquifer have been deposited in localized layers of different textures (i.e., layers of different mixtures of clay, silt, sand, and gravel). Although some of these layers are more permeable than others (e.g., sand relative to silt or clay), making it possible to distinguish between different water-yielding zones locally, the Chuckwalla aquifer is considered to be a single aquifer on a regional basis. The alternating layers of relatively fine-textured, low-permeability sediments that may occur in some areas do not significantly affect the overall pattern of groundwater flow or the aquifer's response to groundwater pumping on a regional basis.

There are several estimates of the amount of groundwater in the Chuckwalla Basin, and each estimate is based on a different set of assumptions of aquifer characteristics. In a report for the California Department of Water Resources (DWR), the USGS estimated that the total volume of groundwater in the basin is approximately 15 million acre-feet (ac-ft) (DWR, 1979). An acre-foot is the volume of water that covers an acre to a depth of 1 foot, and is roughly equivalent to the average annual domestic water demand for two households (assuming four people per household; 100 gallons per day, per person; Dunn and Leopold [1978]). In another DWR publication, the total volume of groundwater in the Chuckwalla Basin is reported to be 9.1 million ac-ft (DWR, 1975). A third estimate was developed by the U.S. Bureau of Reclamation (USBR), which calculated a total amount of 5.6 million ac-ft (U.S. Bureau of Reclamation, 1972). In the previous EIS/EIR (BLM and the County of Riverside, 1992), the total amount of groundwater in the northwestern Chuckwalla Basin was estimated to be approximately 6 million ac-ft, based on the total volume of 15 million ac-ft reported in DWR (1979). All of these estimates represent the entire volume of saturated sediments in the basin and do not consider the amount that can actually be withdrawn by pumping or the quality of the water pumped (i.e., what is potentially recoverable and usable).

The estimated total volume of groundwater in storage in the groundwater basins in the region, as reported by the DWR and USBR, is shown in Table 3.1-1.

Table 3.1-1
Estimated Total Volume of Groundwater in Storage in the Groundwater Basins Surrounding the Project Site

Groundwater Basin	Estimated Volume of Groundwater in Storage (1,000 acre-feet)
Chuckwalla Valley	5,600-15,000*
Pinto Valley	230
Orocopia Valley	150
Palo Verde Mesa	684

*This range represents values reported in Department of Water Resources (1975 and 1979) and U.S. Bureau of Reclamation (1972).

Estimates of the amount of usable groundwater in the Chuckwalla Basin also vary. The DWR reports a usable volume of 900,000 ac-ft (DWR, 1975). In a study of groundwater conditions in the western Chuckwalla Basin, Mann (1986) estimated that the amount of usable groundwater underlying 70,000 acres in the Desert Center area in 1986 was approximately 1 million ac-ft. The 70,000 acres represent roughly 13 percent of the basin's 870-square-mile total area. Applying Mann's value over the entire basin, therefore, results in approximately 7.6 million ac-ft of usable groundwater. Because the work of Mann (1986) is more recent and focuses specifically on the western Chuckwalla Basin, his conclusions are considered the most representative of prevailing conditions in the vicinity of the Project site.

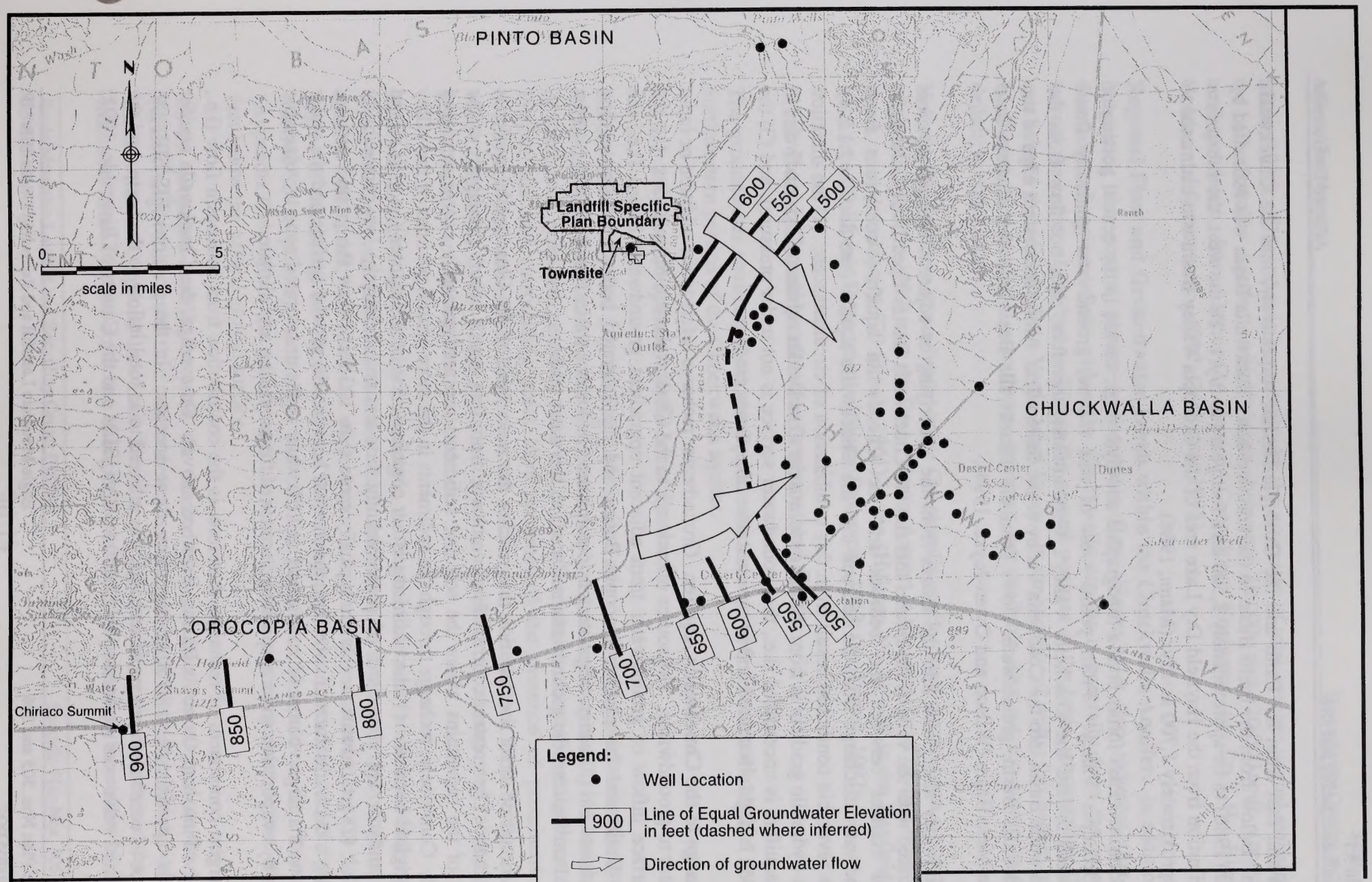
Wells in the Chuckwalla aquifer are typically capable of producing high yields (i.e., several wells range from 1,800 gallons per minute [gpm] to more than 3,900 gpm). Well yields and historical and current pumping from this aquifer are discussed further in Section 3.1.4.

Other Alluvial Aquifers. Outside of the Chuckwalla Basin, the aquifers in each of the other groundwater basins identified above are considered to be distinct and separate features but they are hydraulically interconnected at points of mutual contact (i.e., groundwater flows between the aquifers of different basins). The composition of these other aquifers is essentially the same as the Chuckwalla aquifer (i.e., saturated alluvium overlying bedrock).

3.1.1.2 Regional Groundwater Flow

Interbasin Flow. Groundwater-surface elevations in the eastern Orocopia Basin and the western and northwestern Chuckwalla Basin are shown in Figure 3.1-4.

Figure 3.1-4 indicates that groundwater levels in the Northwestern Chuckwalla Basin and the eastern half of the Orocopia Basin (i.e., east of Chiriaco Summit) are higher than in the central portion of the Chuckwalla Basin. Regionally, therefore, groundwater flows



Source: ROWD, Geo Syntec, 1992

Figure 3.1-4
Groundwater-Surface Elevations in the Chuckwalla Basin
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

south and east from the Pinto and the Orocopia Basins, respectively, into the Chuckwalla Basin. Inflow from the Pinto Basin to the northwestern Chuckwalla Basin was estimated by Mann (1986) to be approximately 2,500 acre-feet/year (ac-ft/yr). To the west, the subsurface contribution from the Hayfield Dry Lake area of the Orocopia Valley Basin was estimated to be approximately 1,700 ac-ft/yr (Mann, 1986).

The Chiriaco Pass forms both a topographic and hydrologic divide in the central portion of the Orocopia Valley. From points west of this feature, groundwater generally flows westward toward the Coachella Valley. Groundwater, therefore, does not flow from the Chuckwalla Basin into the Coachella Valley or the Salton Sea. Along the eastern edge of the Chuckwalla Basin, groundwater flows from the Chuckwalla Basin into the adjacent Palo Verde Mesa Basin (Wilson and Owen-Joyce, 1994).

Groundwater also flows into the basins from the underlying or adjacent bedrock aquifers associated with the various mountains that rim the Chuckwalla Basin. Specifically, along the lateral contact between the bedrock and the Chuckwalla aquifers, conditions favor groundwater discharge from the bedrock into the Chuckwalla aquifer (see Section 3.1.2.4). These favorable conditions result from this combination of circumstances: (1) the direction of the hydraulic gradient is from the bedrock into the Chuckwalla aquifer; (2) groundwater in both aquifers is unconfined (i.e., the groundwater surface is not under pressure); and (3) the bedrock is highly fractured and is representative of a porous medium.

Recharge to the Chuckwalla Aquifer. Groundwater recharge refers to the addition or input of water to groundwater. The source of recharge to the Chuckwalla aquifer includes: (1) the subsurface inflow of groundwater from adjacent upgradient groundwater basins (i.e., the Pinto Basin and the eastern Orocopia Basin) and the saturated bedrock of surrounding mountains; and (2) water, originating as precipitation or surface water, that infiltrates into the ground and reaches the groundwater surface (i.e., the water table).

The amount of direct precipitation that reaches the water table of the Chuckwalla aquifer is very small. The greatest contribution to recharge from this source occurs principally at the edges of the mountains where the soil and sediments are predominantly coarse sand and gravel. Conversely, recharge through the sediments in the more central portions of the valley is negligible because: (1) the sediments either contain a mixture of textures (i.e., silt mixed with sand) or are comprised of predominantly fine-textured, relatively low-permeability material; (2) groundwater levels are typically more than 100 feet below the ground surface, creating a thick unsaturated zone (i.e., the interval between the ground surface and the water table) with a large volume of void space; and (3) water in the unsaturated zone is vulnerable to loss by evaporation and transpiration because of the prevailing arid climate.

The largest component of recharge, therefore, is the contribution from interbasin flow (i.e., from the Pinto and Orocopia Basins described above). On average, the Chuckwalla aquifer receives approximately 6,700 ac-ft/yr from these sources. In the previous EIS/EIR, the concept of combined sources of recharge was referred to as total inflow to the basin, and the associated value was reported to be 12,240 ac-ft/yr (BLM and the County of Riverside, 1992;

Mann, 1986). This value is consistent with the estimates of total average annual recharge to the Chuckwalla aquifer, which range between 10,000 and 20,000 ac-ft (personal correspondence from James C. Hanson Consulting Engineers to Dr. J. H. Birman, Geothermal Surveys, Inc., 1992; GeoSyntec 1995).

Regional Flow and Groundwater Levels within the Chuckwalla Aquifer. In addition to illustrating the general pattern of interbasin flow, Figure 3.1-4 also indicates that the directions of regional flow within the Chuckwalla aquifer is generally from the margins toward the center of the basin. Within the central portions of the basin, groundwater flows east toward the adjacent Palo Verde Mesa Basin. In the vicinity of wells, this pattern could be altered as a result of groundwater pumping but available data are too scarce to draw definitive conclusions.

Historically, depths to groundwater in the Chuckwalla aquifer have ranged from a minimum of about 75 feet (in 1989) near the Desert Center Airport in the central part of the Chuckwalla Basin, to approximately 570 feet (in 1961) in the (Hillman No. 2) well in the Hayfield Dry Lake area (California Department of Water Resources, 1963; GeoSyntec, 1992).

3.1.2 Local Groundwater Occurrence and Flow

The groundwater environment at the Project site includes both the bedrock aquifer and the northwestern portion of the Chuckwalla aquifer.

3.1.2.1 Physical Properties of the Local Bedrock

As described in Section 3.9, the Eagle Mountains are composed of predominantly granitic rocks that have been intruded into older metamorphosed sedimentary rocks. Although both of these rock types are generally hard and dense materials, numerous investigations at the Project site and surrounding areas have documented the presence of prominent, well developed, and extensively interconnected fractures in the bedrock (see Section 3.1.1.1, above; Appendix C-4). These prominent fractures facilitate the storage and movement of groundwater in and through the local bedrock.

Bedrock Fracturing. Bedrock fracturing in the Eagle Mountains varies depending on rock type (lithology) and structural features within the rock (i.e., some rock types fracture more readily than others, and locations of geologic faults and folds also tend to have a higher degree of fracturing; see Section 3.9 and 4.9). In general, three principal sets of fractures, referred to as primary, secondary, and tertiary, have been observed at the Project site (Appendix C-4). Both the primary and secondary fracture sets are present several hundred feet below the natural ground surface.

At the proposed landfill footprint, the density of larger fractures mapped at the ground surface ranges from fewer than two to more than nine per linear foot. In addition, numerous smaller fractures, spaced less than 1 inch apart, are typically present between the larger fractures. Based on the collective site-specific information, including the results of fracture

mapping, borehole video logs, and visual inspection of rock cores, the average fracture spacing across the site and to the depth explored (was determined to be approximately 6 inches (Appendix C-4).

Engineered Subsurface Conduits. In addition to the natural fracturing in the bedrock, a series of interconnected, 25-foot-diameter tunnels is present beneath the southern portion of the proposed Phase 2 landfill footprint. These tunnels, which were excavated above the water table during the previous mining operations, consist of a U-shaped adit (horizontal tunnel) that provides access to three working-level tunnels. The thickness of the bedrock above the working-level tunnels, which are above the adit, varies from 570 feet to 720 feet. Because these tunnels are above the water table, and dewatering operations were not required to maintain them, the tunnels do not influence either the amount of groundwater in storage or the natural pattern of groundwater flow within the bedrock.

Bedrock Hydraulic Conductivity. Hydraulic conductivity (i.e., the ability of geologic material to transmit fluids) is an important factor in determining the average linear rate, or velocity, of groundwater flow. Values of hydraulic conductivity vary from place to place in the bedrock, depending on the variation in fracture width and the frequency of fracture occurrence. In general, the hydraulic conductivity of fractured rock decreases with depth because the higher pressures result in the fractures being fewer in number and smaller in width. In addition, bedrock hydraulic conductivity is typically higher in the vicinity of geologic faults and intrusions (e.g., dikes) because these features tend to enhance fracture density and width.

Values of bedrock hydraulic conductivity at the Project site have been determined through a number of field methods including an analysis of fracture widths and various tests performed in the boreholes (e.g., packer tests) (GeoSyntec, 1993b and Appendix C-4). The overall range of hydraulic conductivity at the Project site and the corresponding average values are summarized in Table 3.1-2, according to the method of evaluation.

Table 3.1-2
Hydraulic Conductivity of the Bedrock Aquifer at the Project Site

Method of Evaluation	Range (cm/s)	Average[1] (cm/s)
Fracture Analysis	6×10^{-6} to 1×10^{-2}	5.4×10^{-4}
Packer Tests	2×10^{-6} to 5×10^{-4}	2.1×10^{-5}

[1]Average value is represented by geometric mean because the values of hydraulic conductivity were found to be lognormally distributed (GeoSyntec, 1993b and Appendix C-4)

The data from the Project site indicate a general consistency in bedrock hydraulic conductivity across the site, with most values between 10^{-5} and 10^{-4} centimeters per second (i.e., 0.00001 to 0.0001 cm/s). These conductivity figures represent moderate to low values

that are equivalent to the hydraulic conductivity of silty sand (Freeze and Cherry, 1979). Locally, however, areas of relatively high hydraulic conductivity (i.e., 10^{-3} to 10^{-2} cm/s) have been identified at the Project site in conjunction with the occurrence of either geologic faults or dikes (Appendix C-4).

3.1.2.2 Groundwater Occurrence in the Local Bedrock

Bedrock outcrops within almost all of the proposed landfill footprint. Where the bedrock does not outcrop within the Project site, the overlying sediments are unsaturated. The saturated portion of the bedrock in the vicinity of the Project site is considered to be an aquifer because some of the wells in the fractured rock have sustained yields of up to 150 gpm. The local bedrock aquifer extends under the sediments along the northwestern margins of the Chuckwalla Basin. Borehole logs indicate that the depth to the top of the bedrock increases with increasing distance from the edge of the mountains. (GeoSyntec, 1992, 1993b).

Bedrock Groundwater Levels. Groundwater levels at the Project site have been established from measurements in 48 boreholes (uncased holes), piezometers (cased boreholes specifically constructed for water-level measurement), and wells (cased boreholes that can serve both as water-level and water-quality monitoring points). The locations of the piezometers and monitoring wells are shown in Figure 3.1-5.

Of the 48 monitoring locations, 32 represent conditions in the bedrock aquifer. Water-level data are available from selected locations for the periods: May to November of 1992, February to December 1993, and August 1995. (The complete record of local water-level data is presented in Appendix C-1 and Appendix C-4). The water-level data are representative of the local water table because of the extensive near-vertical oriented fracturing, the general absence of overlying sediments, and the proximity of the piezometer/well screen (i.e., the intake portion of the piezometer/well) to the groundwater surface.

A map of the groundwater-surface (water-table) elevations underlying the proposed Project site is presented in Figure 3.1-6. The data in this figure are for June 1993, which is the most recent measurement period in which data are available for most of the piezometers and wells. The overall configuration of the water table in Figure 3.1-6 is considered representative of typical conditions because water-level maps based on data obtained both before and after June 1993 do not differ significantly (i.e., do not result in different interpretations of groundwater occurrence or movement). The water table generally follows the configuration of the local topography. Implications of this pattern on the directions of groundwater flow are discussed below in Section 3.1.2.4. More detailed interpretations of the water-table elevations in specific areas of the landfill footprint are presented in GeoSyntec (1993b).

Figure 3.1-6 also shows the location of cross sections through the proposed landfill footprint; these cross sections are shown in Figures 3.1-7 and 3.1-8. Across the Project site, the depth to groundwater below the existing ground surface is typically several hundred to more than

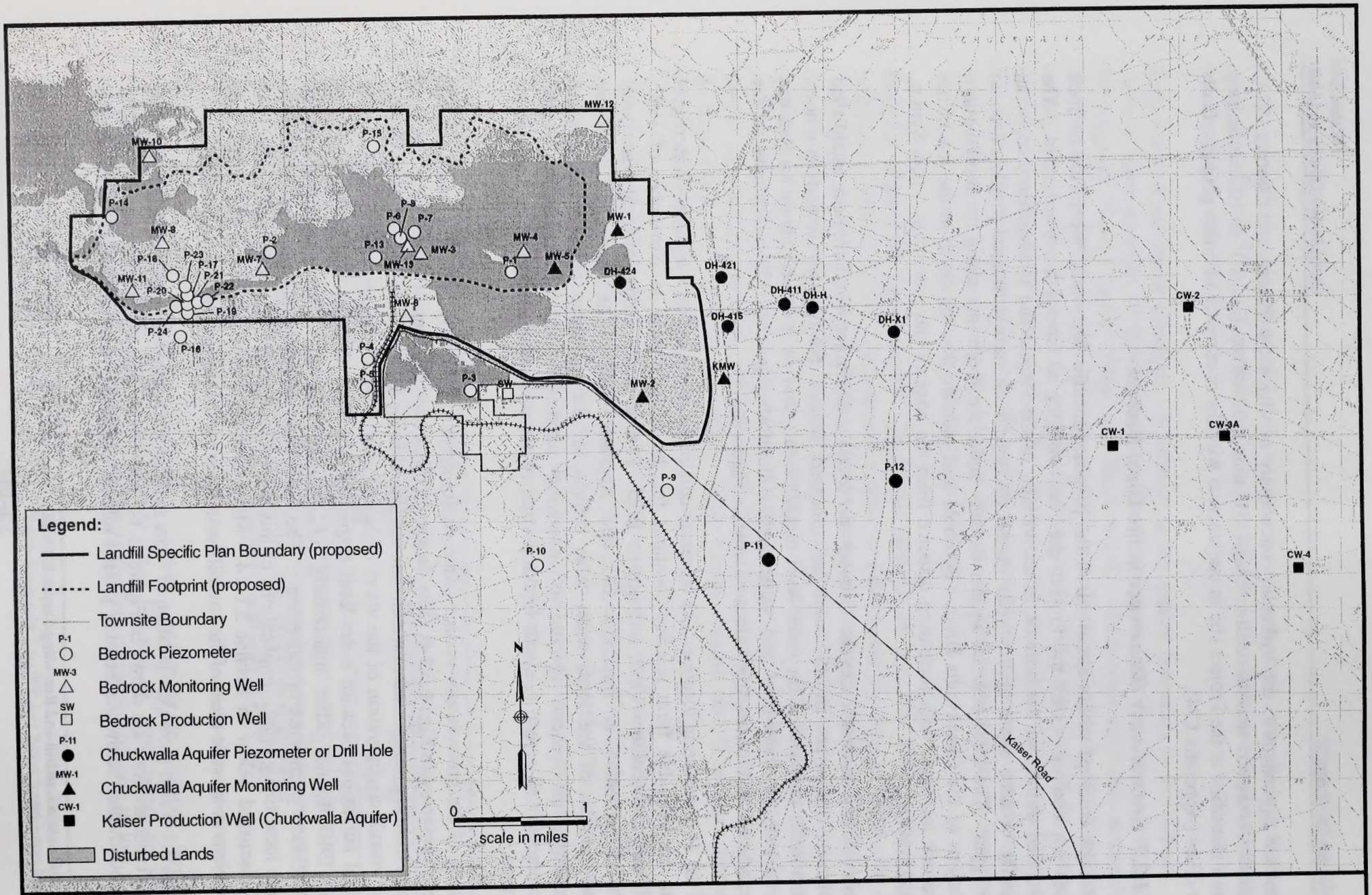


Figure 3.1-5
Groundwater Monitoring Points in the Vicinity of the Project Site
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

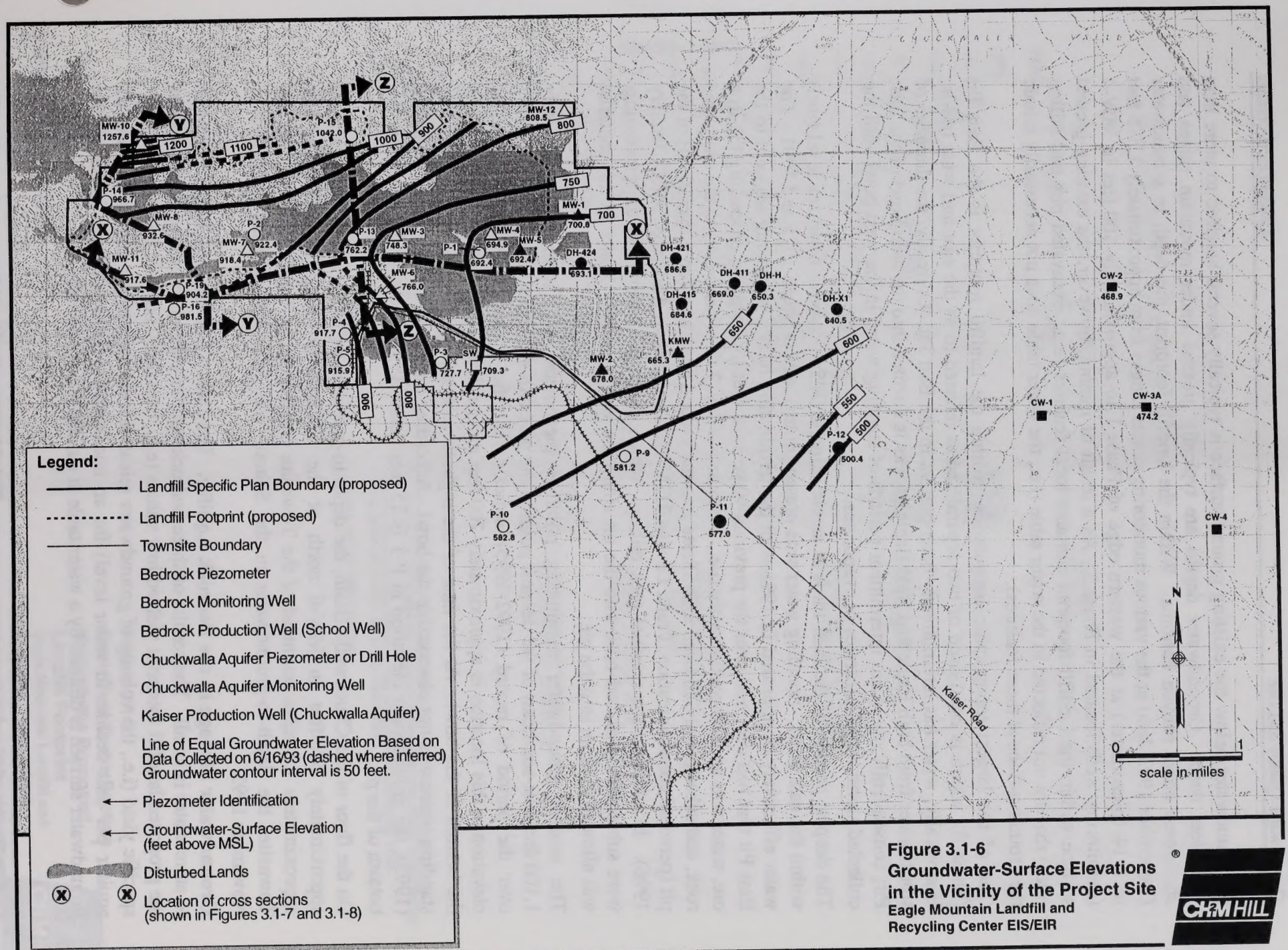


Figure 3.1-6
Groundwater-Surface Elevations in the Vicinity of the Project Site
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 FLewis12 6/96

to groundwater below the existing ground surface is typically several hundred to more than 1,000 feet deep. Groundwater depths are typically greatest under mountain ridges and shallowest under canyon bottoms. Within the landfill footprint, the depth to groundwater (December 1993 data) at the various monitoring points ranges from approximately 1,375 feet in P-14 (piezometer) at the western edge of Phase 1 to approximately 100 feet in MW-4 (monitoring well) located in Phase 5. As a result of mining, however, the existing ground surface within the landfill footprint contains local features (e.g., excavated pits and tailing piles) that are not reflected in the water table (i.e., the water table does not necessarily mimic the ground surface at these features).

One of the largest topographic irregularities within the landfill footprint is the East Pit (Phase 5), which is comprised of two separate areas referred to as the east and west bowls. Historically, water has intermittently been present in the East Pit. Currently, the drainage of storm water from both Eagle and Bald Eagle Creeks is directed into the west bowl of the East Pit; consequently, there are intermittent periods of standing water in the west bowl until the collected storm water infiltrates or evaporates.

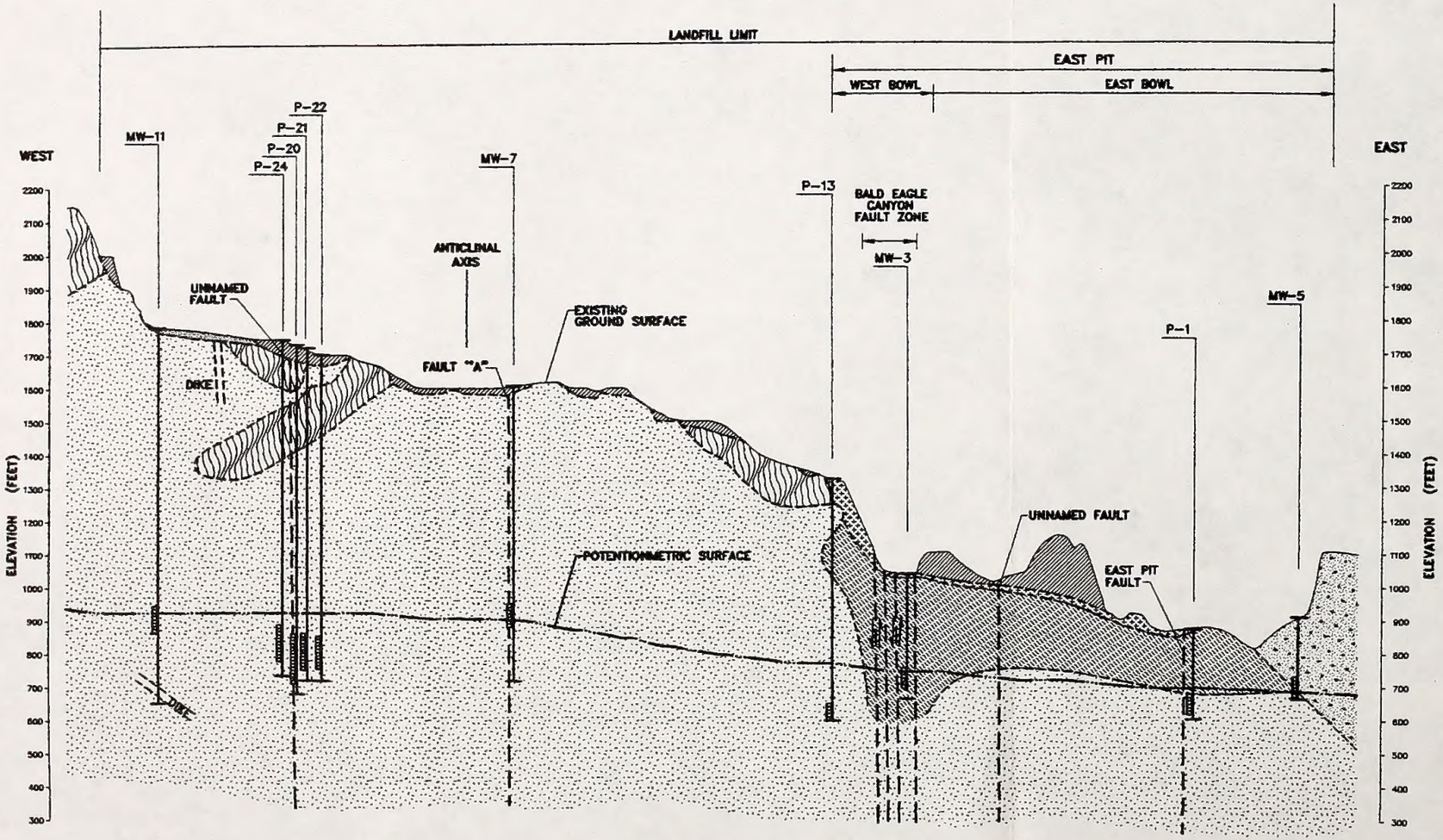
The deepest portion of the East Pit is at an elevation of 705 feet above mean sea level (msl) within the east bowl. Standing water was present in this area between 1975 and 1991. The water effectively disappeared in 1991 with the termination of ore processing adjacent to the East Pit that had occurred over the previous 40 years at that location. In processing the iron ore, water was applied continuously (i.e., 24 hours per day, 7 days per week) to the excavated rock, and subsequently allowed to infiltrate into the ground northwest (and upgradient) of the pit (personal communication, Frank Lewis/CH2M HILL with Orlo Anderson, MRC; January 1996). In addition, the residual rock tailings, which contained water from the processing, were subsequently placed back into the pit along the western edge. Water in this material was allowed to drain into the pit.

The nearest groundwater monitoring point is piezometer P-1, located approximately 1,100 feet east-southeast of the deepest point in the pit (within the east bowl). Data from P-1 over the period of record (1992-1995) indicate that the highest recorded groundwater elevation at this location is approximately 700 feet msl (in June 1992), or about 5 feet below the bottom of the bowl. At the time of the highest recorded groundwater elevation in P-1, standing water was not observed in the bowl. According to the most recent water-level data (1995), the groundwater elevation in P-1 is 15 feet below 1992 levels, or 20 feet below the bottom of the pit.

On the floor of the Chuckwalla Basin, the depth-to-groundwater in the bedrock ranges from approximately 576 feet in MW-6 north of the Townsite to roughly 430 feet in P-9 approximately 1.5 miles southeast of the Townsite (see Figure 3.1-5 for locations). At the Townsite, the depth-to-groundwater in the School Well was approximately 528 feet in November 1993.

Groundwater Storage in the Bedrock Aquifer. The capacity of the local bedrock aquifer to store water is small. The results of three bedrock-aquifer pumping tests conducted within the proposed landfill footprint yielded low values (e.g., between 0.001 and 0.008) of aquifer-specific yield (i.e., the volume of groundwater released from storage per unit surface area of aquifer per unit decline in water level) for an unconfined aquifer (i.e., one in which the groundwater surface is defined by a water table at atmospheric pressure).

HYDROGEOLOGIC CROSS SECTION X–X



SECTION X–X

HORIZONTAL SCALE: 1" = 2000'
VERTICAL SCALE: 1" = 400'

LEGEND

- ARTIFICIAL FILL
- CANYON FLOOR QUATERNARY ALLUVIUM
- CHUCKWALLA VALLEY ALLUVIUM (INCLUDES DEBRIS FLOWS)
- IRON ORE
- HYDROTHERMALLY ALTERED METASEDIMENTARY ROCK AND SOME ALTERED IGNEOUS ROCK
- GRANITIC INTRUSIVE ROCK (PREDOMINANTLY QUARTZ MONZONITE)
- METASEDIMENTARY ROCK (PREDOMINANTLY QUARTZITE)

NOTES:

1. GEOLOGY IS BASED ON THE SURFACE GEOLOGIC MAP AND BORING LOGS PREPARED BY GSI/water [GEOSYNTEC, 1992, PLATES 1 & 2]. SUBSURFACE GEOLOGY BETWEEN CONTROL POINTS IS GENERALIZED.
2. POTENTIOMETRIC SURFACE IS DRAWN FROM FIGURE 5 AND MEASURED GROUND-WATER LEVEL ELEVATIONS IN THE INDICATED MONITORING WELLS AND PIEZOMETERS.
3. SEE FIGURE 3.1-6 FOR LINE OF CROSS SECTION.

Source: GeoSyntec 1996

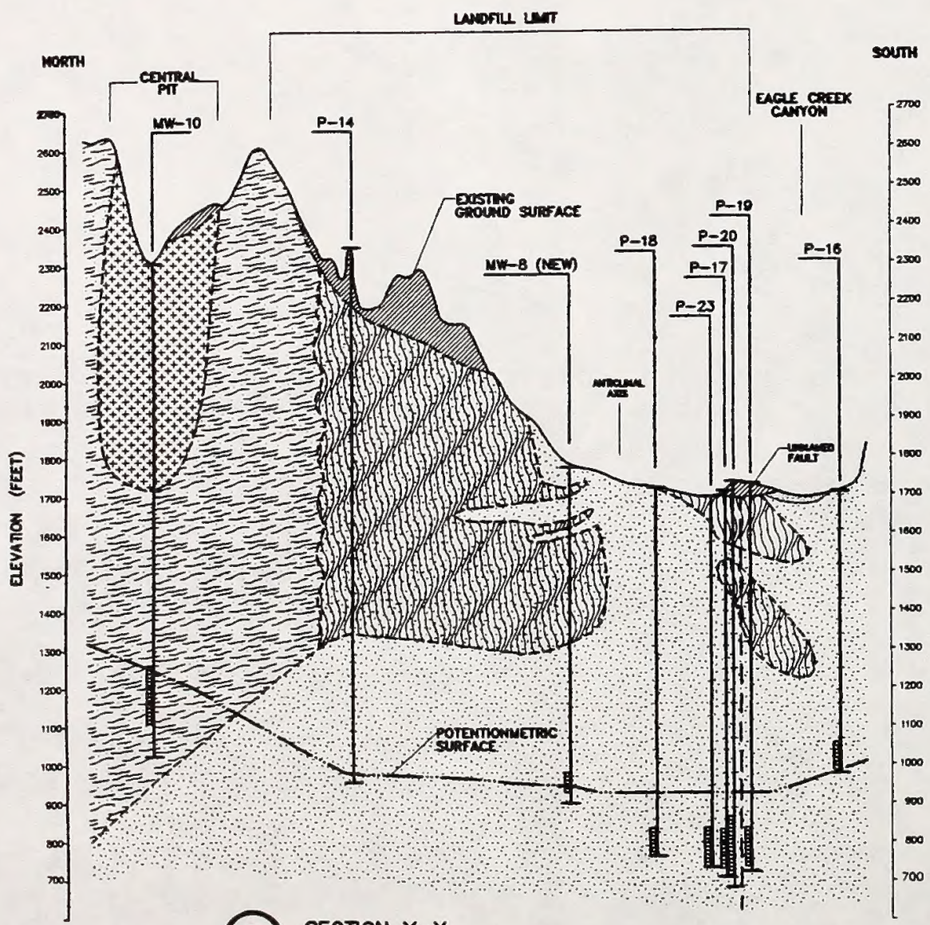
Figure 3.1-7
East-West Cross Section through the Proposed Landfill Footprint
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2MHILL

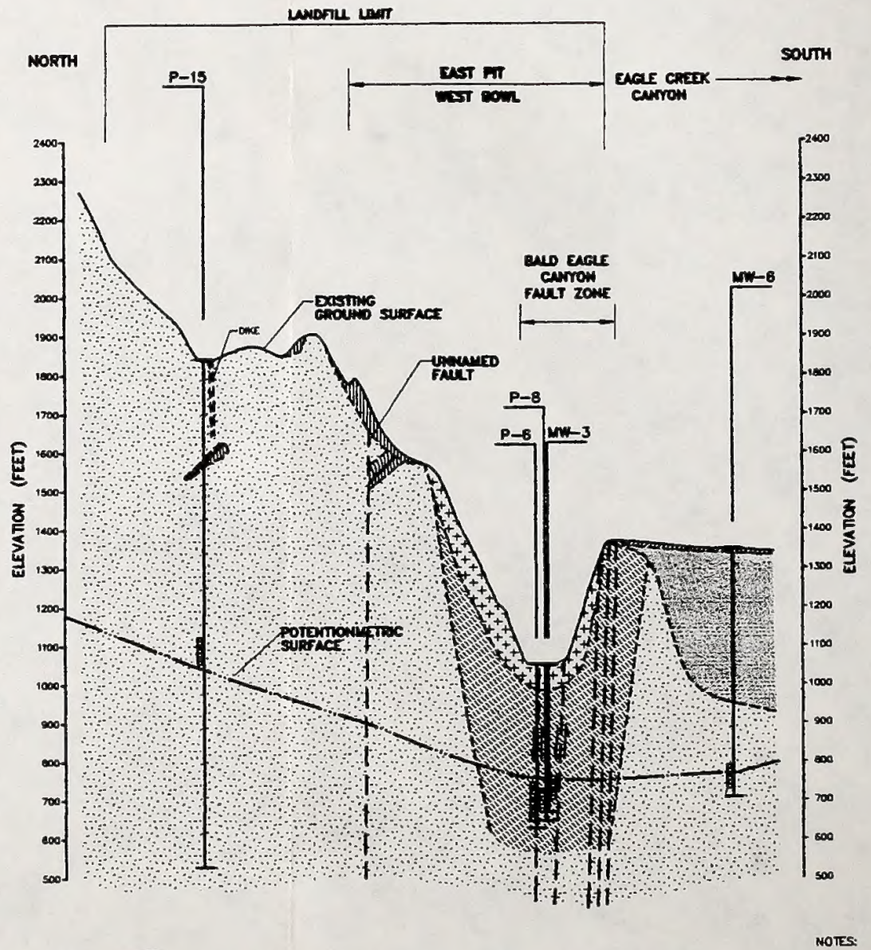
m115231.T6.20 C-SecXX 6/96



HYDROGEOLOGIC CROSS SECTIONS Y–Y AND Z–Z



SECTION Y–Y
HORIZONTAL SCALE: 1" = 2000'
VERTICAL SCALE: 1" = 400'



SECTION Z–Z
HORIZONTAL SCALE: 1" = 2000'
VERTICAL SCALE: 1" = 400'

LEGEND

- ARTIFICIAL FILL
- CANYON FLOOR QUATERNARY ALLUVIUM
- IRON ORE
- HYDROTHERMALLY ALTERED METASEDIMENTARY ROCK AND SOME ALTERED IGNEOUS ROCK
- METASEDIMENTARY ROCKS WITH NUMEROUS ANDESITE DIKES
- QUARTZITE THICKLY INTRUDED BY GRANITIC ROCK
- GRANITIC INTRUSIVE ROCK (PREDOMINANTLY QUARTZ MONZONITE)
- METASEDIMENTARY ROCK (PREDOMINANTLY QUARTZITE)

NOTES:

1. GEOLOGY IS BASED ON THE SURFACE GEOLOGIC MAP AND BORING LOGS PREPARED BY GSi/water [GEOSYNTEC, 1992, PLATES 1 & 2]. SUBSURFACE GEOLOGY BETWEEN CONTROL POINTS IS GENERALIZED.
2. POTENTIOMETRIC SURFACE IS DRAWN FROM FIGURE 5 AND MEASURED GROUND-WATER LEVEL ELEVATIONS IN THE INDICATED MONITORING WELLS AND PIEZOMETERS.
3. SEE FIGURE 3.1-6 FOR LINE OF CROSS SECTION.

Source: GeoSyntec 1996

Figure 3.1-8
North-South Cross Sections through the Proposed Landfill Footprint
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 C-SecYYZZ 6/96



Well Yields. Compared to wells in the Chuckwalla aquifer, yields (pumping rates) from bedrock wells are relatively low, and are highly variable from place to place depending on the amount of localized fracturing. For example, pumping rates during aquifer testing in MW-3 and MW-13 within the Eagle Canyon Fault Zone were less than 2 gpm. The maximum pumping rates during tests in MW-7 and MW-11 were also less than 2 gpm. Elsewhere in bedrock, however, sustained pumping rates have been as high as 148 gpm (P-20 aquifer testing). Sustained pumping at 75 gpm has also been documented in the School Well, which is a bedrock well.

3.1.2.3 Groundwater Flow in the Bedrock Aquifer

Recharge. The sources of recharge to the bedrock aquifer include direct precipitation on outcrop areas and the infiltration of runoff, either through the overlying alluvium in the bottoms of small mountain canyons or directly through exposed bedrock surfaces. Recharge from the infiltration of runoff tends to be the larger of these two sources. At the Project site, recharge to the bedrock aquifer is facilitated by the East Pit, where the runoff from both Eagle and Bald Eagle Creeks is currently directed (see Section 3.6.3.1).

In general, however, the arid climate, local rugged topography, and the tendency for rainfall to be of short duration and high intensity all combine to create unfavorable conditions for recharge to the bedrock aquifer (i.e., what little precipitation that does occur tends either to run off rapidly, or be lost to the atmosphere through evaporation or transpiration). The infiltration of direct precipitation onto outcrop areas is therefore only a small component of recharge to the bedrock aquifer.

Using the Eagle Creek watershed as representative of the extent of the recharge area for the local bedrock aquifer, it is estimated that approximately 200 ac-ft/yr enter the aquifer (GeoSyntec, 1992). This value is based on an assumption that 10 percent of the average annual precipitation (3.5 inches) over the watershed reaches the groundwater in the bedrock (Appendix C-1).

General Direction(s) of Flow. Because the results of numerous site-specific hydrogeologic investigations have concluded that the local bedrock is a porous medium (see Section 3.1.1.1), the interpretation of groundwater flow in the local bedrock is the same as in the Chuckwalla aquifer. The general directions of flow in the bedrock aquifer are, therefore, toward the: (1) south in the Phase 1, Phase 2, and northern portion of the Phase 3 areas of the proposed landfill footprint; (2) southeast in Phase 4, Phase 5, southern portion of Phase 3, and southeast of the Townsite; and (3) east in the Townsite.

Groundwater flow is driven by hydraulic gradient, which is three dimensional (i.e., groundwater flows both horizontally and vertically through the saturated bedrock as a function of the hydraulic gradient along these orientations). The hydraulic gradient also varies locally and can change over time. Although there are no specific data on the vertical component of hydraulic gradient at the Project site, GoeSyntec (Appendix C-4) concluded, based on local hydrogeological conditions, that vertical gradients generally influence overall groundwater flow less than horizontal gradients (i.e., horizontal flow predominates over vertical flow within the bedrock aquifer at the Project site).

Groundwater Velocity. The velocity of groundwater flow is related to hydraulic conductivity, hydraulic gradient, and bedrock porosity. These properties vary within the bedrock beneath the landfill footprint.

Igneous and metamorphic rocks (i.e., the principal rock types of the Eagle Mountains) typically have porosity values that range between 1 and 10 percent (Davis and DeWiest, 1966). GeoSyntec (1996) estimated that the average effective porosity of the bedrock underlying the Project site is approximately 5 percent. Based on this value of porosity, the groundwater levels in Figure 3.1-6 and the range of hydraulic conductivity values presented above (see Table 3.1-2), groundwater velocities in the local bedrock generally range between approximately 3 and 30 feet per year, with a representative value on the order of 10 feet per year (Appendix C-4).

3.1.2.4 Groundwater Occurrence in the Local Chuckwalla Aquifer

Groundwater Occurrence. A large portion of the Project site, excluding the proposed landfill footprint, extends onto the floor of the Chuckwalla Basin (see Figure 3.1-1). Over much of this area, groundwater occurs in the buried bedrock and not in the overlying sediments. This is the case particularly for the area located south of Kaiser Road and west of the Colorado River Aqueduct that includes the Townsite and many of the landfill support facilities. North and east of this area, the bedrock is relatively deeper, and groundwater occurs in the overlying sediments.

Physical Properties of the Aquifer. The Chuckwalla aquifer in the vicinity of the Project site is largely composed of poorly sorted and fine-grained sediments. Information on the hydraulic properties of the Chuckwalla aquifer in the vicinity of the Project site is available from aquifer tests conducted in MW-2 and MW-5 (see Figure 3.1-5; GeoSyntec, 1992). The results of these tests indicate that the transmissivity of the aquifer (i.e., the hydraulic conductivity multiplied by the thickness of the aquifer) in the vicinity of the eastern end of the East Pit (i.e., MW-5), is approximately 450 gallons per day per foot (gpd/ft). Because the thickness of the aquifer is known to be 22 feet at this location, this value of transmissivity corresponds to a hydraulic conductivity of approximately 8×10^{-4} cm/s, which is a moderate value representative of the rate at which water moves through a silty sand mixture.

A lower transmissivity value of 95 gpd/ft was obtained from a test at MW-2, located in the former tailings pond area, where relatively low-permeability sediments are common below the ground surface (unrelated to the presence of the tailing ponds). The thickness of the aquifer is unknown at this location but, if it is assumed to be 100 feet, the hydraulic conductivity is about 3×10^{-5} cm/s. This value is low and is representative of a silty sand.

In general, these values are lower than what has been reported in other parts of the Chuckwalla aquifer. A review of data from the Kaiser water (production) wells (reported in the previous EIS/EIR [BLM and County of Riverside, 1992]) and data reported in Kunkel (1963) indicate that values of hydraulic conductivity for the Chuckwalla aquifer range

between approximately 5 x 10^{-4} cm/s to 1 x 10^{-2} cm/s. The locations of the Kaiser production wells are shown in Figure 3.1-5. These are relatively high values that are indicative of a very permeable aquifer. Further support for the permeable nature of the aquifer comes from the typically high pumping rates that well owners have experienced.

3.1.2.5 Groundwater Flow in the Local Chuckwalla Aquifer

Depths to Groundwater. Groundwater-level data for the Chuckwalla aquifer in the vicinity of the Project site are available from 14 monitoring points, which are shown in Figure 3.1-5. The water-level data, presented as contours of equal elevation in Figure 3.1-6, indicate that the depth to groundwater ranges from slightly more than 200 feet in MW-5 to approximately 350 feet in P-11.

General Direction(s) of Flow. The general direction of groundwater flow in the local Chuckwalla aquifer is southeast toward the center of the Chuckwalla Basin (see Figure 3.1-4).

Groundwater Velocity. As mentioned in the discussion of groundwater in the local bedrock, the horizontal velocity of groundwater in the Chuckwalla aquifer depends on the values of aquifer parameters that vary spatially. The porosity of granular porous media (e.g., silt, sand, and gravel that comprise the Chuckwalla aquifer) typically ranges from 20 percent for poorly sorted (i.e., highly mixed range of grain sizes) to 60 percent for uniformly fine-grained material (Davis and DeWiest, 1966). Because the Chuckwalla aquifer contains a range of sediment grain sizes from fine sand and silt to gravel, a porosity value of 25 percent is considered representative.

The other principal parameters upon which groundwater velocity depends are the hydraulic gradient, which is obtained from the water-level data presented in Figure 3.1-6, and the hydraulic conductivity. In the area nearest the proposed Project site where the hydraulic gradient in the Chuckwalla aquifer can be defined, the hydraulic conductivity ranges between 10^{-5} and 10^{-4} cm/s. Based on these values, groundwater velocities in the local Chuckwalla aquifer range between approximately 1 and 20 feet per day.

3.1.3 Groundwater Quality

The quality of groundwater is typically described in terms of the predominant constituents and the concentrations of specific parameters relative to drinking water standards or maximum contaminant levels (MCLs). MCLs have been established at both the federal and state level and include both primary and secondary standards. Primary standards represent threshold concentrations that have been established for specific contaminants to protect human health. Secondary standards pertain to contaminants that do not have specific health-based standards but, when present at elevated concentrations, could adversely affect the aesthetic characteristics (e.g., color, odor, taste, and/or appearance) of drinking water.

3.1.3.1 Bedrock Aquifer

The water quality in the bedrock aquifer within the Project site is of the calcium-magnesium sulfate type based on an analysis of the major natural chemical constituents. A common indicator of general groundwater quality is the amount of total dissolved solids (TDS) present in the groundwater. The secondary MCL for TDS is variable, with the maximum recommended concentration being 500 milligrams per liter (mg/L). The acceptable range, however, is from 1,000 mg/L to as high as 1,500 mg/L for short-term use. Based on available TDS data from existing onsite monitoring wells, TDS concentrations in the bedrock aquifer range between 620 and 2,340 mg/L. This water quality is considered poor when compared to the secondary MCL.

TDS concentrations are typically lower in the western portion of the Project site and generally higher in wells in the central and eastern areas. Chemical data from piezometer P-20 are an exception to the generally poor quality of groundwater in the bedrock aquifer. This piezometer is located near areas that facilitate groundwater recharge (i.e., downgradient of the trace of the westernmost geologic fault in the landfill footprint (see Figure 3.9-5), and immediately north of a relatively large area of alluvium in the Eagle Creek drainage). Because of the proximity to recharge, the residence time for groundwater within the bedrock is generally lower in the vicinity of P-20 than elsewhere across the Project site. As a result, the concentrations of dissolved constituents from the bedrock are typically lower (TDS concentrations of about 250 mg/L) in the groundwater at this location.

In addition to TDS, at least two chemical constituents are present in naturally high concentrations in the bedrock aquifer. Specifically, fluoride concentrations range up to 2.2 mg/L (in MW-6), which exceeds the primary MCL of 1.4 mg/L (established for the area that includes the Project site). In addition, sulfate concentrations in the bedrock aquifer range from about 180 to 1,440 mg/L, and average about 665 mg/L. The secondary MCL for sulfate ranges from 500 mg/L to (for short-term use) 600 mg/L, with the maximum recommended concentration of 250 mg/L. Available temperature data indicate that the groundwater in the bedrock aquifer is warm (generally above 88°F and ranging up to about 93°F).

The most recent (December 1990) water quality data from the School Well show TDS at 850 mg/L and fluoride at 1.9 mg/L, which exceeds the primary MCL. The data also show sulfate at 370 mg/L.

3.1.3.2 Chuckwalla Aquifer

TDS in groundwater from the Chuckwalla aquifer is generally lower than in the bedrock aquifer, ranging between about 425 and 950 mg/L. The lowest TDS concentrations are from MW-1, while TDS concentrations from the Kaiser production wells and wells in the eastern portion of the Project site tend to be higher. Groundwater in the Chuckwalla aquifer has a pH generally greater than 8, which implies that it is slightly alkaline. Groundwater temperatures range from about 81° to 93°F. Warmer groundwater temperatures tend to occur in the

western portions of the aquifer (about 90°F on average), near the contact with the bedrock aquifer. Groundwater from the Kaiser production wells averages about 86°F.

Fluoride concentrations in the local Chuckwalla aquifer range from less than 1 to more than 13 mg/L. Other dissolved constituents in groundwater in the Chuckwalla aquifer are generally below their respective MCLs.

Recent data from alluvial wells in the eastern Chuckwalla Valley indicate that high TDS and high fluoride and sulfate concentrations are a regional or basinwide phenomenon (Woodward-Clyde, 1989). Statistical analysis of water-quality data indicates that the variation in concentrations of TDS and other major water quality parameters is low between repeated sampling (e.g., quarterly) events for each well sampled. This suggests that there is little seasonal variation in groundwater quality, which is consistent with the prevailing arid climate, where the little precipitation that does occur is not limited to a single season (SCS Engineers, 1988).

3.1.4 Groundwater Use

In the Eagle Mountain area (i.e., Pinto Basin and the western Chuckwalla Basin), groundwater is the principal source of water for agricultural, industrial, commercial, and domestic uses. Currently, all of this water is produced from the Chuckwalla Basin. Up until the early 1980s, however, groundwater for the Kaiser mining operations was also pumped from two wells in the Pinto Basin. Within the Chuckwalla Basin, most wells pump from the Chuckwalla aquifer; the only known production well in the bedrock is the School Well, which is located at the Eagle Mountain High School east of the Townsite.

3.1.4.1 Historical Groundwater Use

Groundwater Pumping. The first high-capacity water well in the Chuckwalla Basin was drilled near the Desert Center airport in 1958 to support agricultural development. Other wells soon followed, generally northeast of Desert Center along State Route 177 (Rice Road), and, by the early 1960s, several irrigated agricultural enterprises had been established. In recent years, however, this area has experienced a decline in agricultural production (see Section 3.5) and a corresponding decrease in groundwater pumping.

The DWR compiles annual records of the amount (over 10 ac-ft) of groundwater pumped from individual wells in the state. Because well owners are not required to report the amount pumped, the DWR records for the Chuckwalla Basin are incomplete. In the absence of complete data, Mann (1986) and James C. Hanson Engineers (personal correspondence to Dr. J. H. Birman, Geothermal Surveys, Inc., 1992) estimated the amount of groundwater pumped in the western Chuckwalla Basin in 1986 and 1992, respectively (Table 3.1-3). Each of these estimates is largely based on the amount of agricultural acreage and the associated water demand for specific crops.

Table 3.1-3
Estimated Groundwater Pumpage in the Western Chuckwalla Basin in Acre-Feet

Groundwater Use	1986[1]	1992[2]	1994
Agricultural	22,040	5,600	3,617[3]
Commercial/Domestic[4]	920	2,500	3,500[5]
Total	22,960	8,100	7,100

[1]Source: Previous EIS/EIR (BLM and County of Riverside, 1992); Mann (1986)
[2]Source: James C. Hanson Engineers (1992)
[3]Source: Samons (1994)
[4]Includes water for Lake Tamarisk, Kaiser, desert aqua farms and miscellaneous domestic uses
[5]Maximum estimated value based on recent trends

In 1986 (a representative year for relatively high groundwater use prior to the recent agricultural decline), the total amount pumped was estimated to be approximately 23,000 ac-ft. In 1992, the total amount of groundwater pumped was estimated to be approximately 8,100 ac-ft. These values of total pumping represent a reduction in total annual agricultural water use from approximately 22,040 ac-ft to approximately 5,600 ac-ft over the 6-year period. This reduction was partially offset by an increase in groundwater pumping for commercial purposes (from 920 to 2,500 ac-ft/yr) over the same period. In addition to these estimates, Samons (personal communication with A. Lome, Eagle Crest Energy Company; 1994) developed a more recent approximation of agricultural water use of 3,617 ac-ft for 1994. This represents an additional decline in agricultural water use of 2,000 ac-ft/yr between 1992 and 1994.

In addition to local farmers, the other significant groundwater user in the western Chuckwalla Basin has been Kaiser. Between 1948 and 1984, Kaiser pumped between 30 and 3,950 ac-ft/yr from two wells located in the gap between the Pinto and Chuckwalla Basins. Kaiser began to pump from the Chuckwalla aquifer in 1964 when three wells (CW-1, CW-2, and CW-3) were installed approximately 4 miles east-southeast of the proposed Project site. A fourth well (CW-4) was added near the other three in 1977, and CW-3 was replaced with a new well (CW-3A) in 1994. Production from these four wells typically ranged between 5,000 and 7,000 ac-ft/yr during the 1960s and 1970s. Since full-time mining activities have stopped, however, pumping from Kaiser wells has fallen to below 1,000 ac-ft/yr.

Groundwater Overdraft. Overdraft occurs when the rate of groundwater pumping exceeds the rate of groundwater replenishment (i.e., approximately 12,200 ac-ft/yr on an average annual basis). This condition occurred in the Chuckwalla Basin in early 1981 and continued into the late 1980s. The result was a sharp decline in groundwater levels in the Desert Center area of the basin as a result of pumping. In recent years, however, water levels have increased as pumping decreased, and available pumping data indicate that the basin is currently not in overdraft (i.e., total pumping is less than approximately 7,500 ac-ft/yr or less than roughly 60 percent of the total estimated amount of groundwater replenishment to the Chuckwalla Basin).

3.1.4.2 Current Groundwater Use

Currently, there are more than 60 water wells in the western Chuckwalla Basin. The locations of these wells are shown in Figure 3.1-9. As mentioned above, current (1995) pumping from these wells is estimated to be less than 7,500 ac-ft/yr. Since 1990, Kaiser has pumped a total of 583 ac-ft/yr on average from two wells (CW-3A and CW-4).

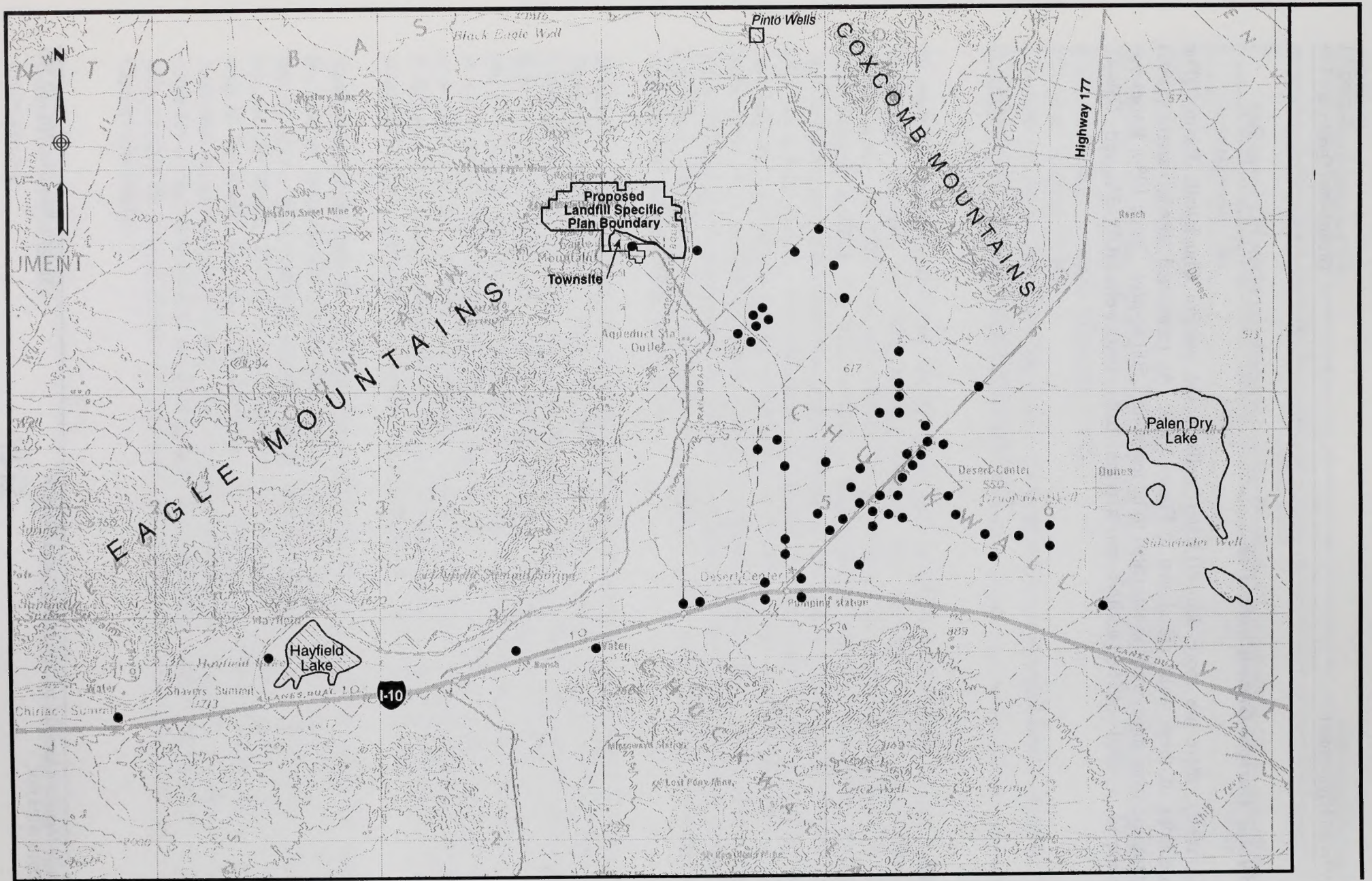


Figure 3.1-9
Water Wells in the Western Chuckwalla Basin
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

3.2 Public Health and Safety

This section addresses those aspects of the existing conditions at the Project site that pertain to public health and safety, including regulatory setting, hazardous materials, fires, vectors, worker safety, and public safety. At the Project site, hazardous wastes are discussed in the context of regulatory agencies' determinations regarding the former full-time mining operation; current, limited mining-related activities; and previous and existing activities at the Townsite.

3.2.1 Federal and State Laws Governing Uses of the Project Site

This EIS/EIR evaluates existing baseline environmental conditions in the context of federal and state laws governing the hazardous materials and hazardous wastes. This section also addresses investigations of physical conditions undertaken by federal and state agencies to determine compliance with applicable laws and regulations for protection of public health and safety. These laws are: (1) Resource Conservation and Recovery Act (RCRA); (2) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); (3) California Hazardous Substances Account Act; (4) various state and federal regulations for permitting, developing, operating and closing solid waste municipal landfills (e.g., Subtitle D of RCRA); and (5) California Surface Mining and Reclamation Act.

3.2.1.1 Resource Conservation and Recovery Act

Two sets of interrelated and complementary hazardous waste management regulations that pertain to RCRA apply in California: RCRA Hazardous Waste and non-RCRA Hazardous Waste.

RCRA Hazardous Waste. Subtitle C of RCRA (1976, as amended by the Hazardous and Solid Waste Amendments of 1984, 42 USC Sections 6901 and implemented through EPA regulations in Code of Federal Regulations [CFR] Part 261 *et seq.*) provides the regulatory framework established to protect human health and the environment from the effects of improper management of hazardous waste. Determining what is a hazardous waste under RCRA is a key question, because only those wastes found to be hazardous are subject to Subtitle C regulations.

Congress defined the term "hazardous waste" in Section 1004(5) of RCRA as a "solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may:

(a) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or

(b) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed."

RCRA defines hazardous wastes in terms of properties of a solid waste. Therefore, if a waste is not a solid waste, it cannot be a hazardous waste as defined by RCRA. Part 261 of 40 CFR specifies that a solid waste is hazardous if it is not excluded from regulation as a hazardous waste and if it meets one of the following conditions:

- Exhibits, on analysis, any of the characteristics (as defined in 40 CFR 261.20 through 261.24) of a hazardous waste (i.e., ignitability, corrosivity, reactivity, or toxicity);
- Has been named as a hazardous waste and listed as such;
- Is a mixture containing one or more listed hazardous waste(s) and a solid waste (unless the mixture is specifically excluded), or;
- Is a mixture containing solid waste and a characteristic hazardous waste (unless the mixture no longer exhibits any of the characteristics of hazardous waste)

All RCRA hazardous wastes as defined under EPA regulations are considered hazardous under state law and are regulated within California by the Department of Toxic Substances Control (DTSC), formerly the Toxic Substances Control Division of the Department of Health Services, under the California Hazardous Waste Control Law (California Health and Safety Code Sections 25100 *et seq.*, implemented through DTSC regulations in Title 22, California Code of Regulations [CCR], Division 4.5, Chapters 10 through 45).

Non-RCRA Hazardous Waste. California defines non-RCRA hazardous waste as "all hazardous waste regulated in the State, other than RCRA hazardous waste." California classifies waste as non-RCRA hazardous waste based on:

- A list of presumptive hazardous waste constituents
- Several characteristic tests
- Otherwise defined in 22 CCR 66261.101

DTSC regulations (22 CCR 66261, Appendix X) list 791 chemical names and 66 common names of wastes presumed to be hazardous waste unless otherwise demonstrated. Characteristic tests under DTSC regulations include:

- Toxicity, including acute toxicity and aquatic toxicity (broader than the U.S. Environmental Protection Agency's [EPA's] toxicity characteristic leaching procedure [TCLP]-toxicity testing)
- Ignitability (essentially the same as EPA)

- Reactivity (essentially the same as EPA)
- Corrosivity (DTSC corrosivity characteristic standard applies to liquid and solid waste, while EPA's test only applies to liquids)
- Persistent and bioaccumulative constituents exceeding either the Soluble Threshold Limit Concentration (STLC) or the Total Threshold Limit Concentration (TTLC) values listed in 22 CCR 66261.24 after undergoing the Waste Extraction Test (WET) procedure

California also regulates a class of non-RCRA hazardous wastes known as "special waste." Special waste is defined as:

- A solid, a water-based sludge, or a water-based slurry in which the solid portion is substantially insoluble in water
- Hazardous solely because it contains a persistent and bioaccumulative substance either
  - At a solubilized and extractable concentration exceeding its STLC or
  - At a total concentration exceeding its TTLC
  - At a solubilized and extractable concentration less than its TTLC value

Once materials have been designated hazardous wastes, they are subject to strict regulation from the point at which they are originally generated to the point at which they are ultimately destroyed or placed in long-term storage, such as in a federally approved Treatment, Storage or Disposal Facility (TSDF).

3.2.1.2 Comprehensive Environmental Response, Compensation, and Liability Act

In 1980, Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act, usually referred to as CERCLA or Superfund (42 U.S.C. sections 9601 *et seq*). CERCLA's most basic purposes are to provide funding and enforcement authority for cleaning up the thousands of hazardous waste sites created in the United States in the past and for responding to hazardous substance spills.

With respect to hazardous waste, CERCLA joins RCRA to provide comprehensive statutory coverage. Generally, while RCRA establishes a cradle-to-grave regulatory program for present hazardous treatment, storage, and disposal activities, CERCLA establishes a comprehensive response program for past hazardous waste disposal activities.

CERCLA's scope is broader than any of the other federal environmental statutes. The Clean Air Act (CAA) deals solely with air, and the Clean Water Act (CWA) addresses water issues, whereas CERCLA applies to all environmental media (i.e., air, surface water, groundwater, and soil). In addition, unlike the statutes that focus on a single medium, such as water or air,

CERCLA can apply directly to any type of industrial, commercial, or noncommercial facility regardless of whether there are specific regulations affecting that type of facility and regardless of how that facility could affect the environment (e.g., through stacks, pipes, impoundments).

Events that could trigger a response or liability under CERCLA are the release or threat of release into the environment of a hazardous substance, pollutant, or contaminant. The terms "hazardous substance," "hazardous waste," "release," and "pollutant or contaminant" are defined by CERCLA.

CERCLA Definition of Hazardous Substance and Hazardous Waste. Under CERCLA Section 101(14), a "hazardous substance" is any substance EPA has designated for special consideration under the CAA, CWA, or TSCA (Toxic Substances Control Act), and any "hazardous waste" under RCRA. In addition, the EPA must designate additional substances as hazardous which "may" present substantial danger to health and the environment (Section 102[a]). The EPA maintains and updates a list of all such "hazardous substances" in 40 CFR Part 302. As of the date of publication of this EIS/EIR, there are a total of 724 hazardous substances and 1,500 radionuclides on the list. Congress has excluded only two basic types of substances from the definition of "hazardous substances": (1) petroleum and (2) natural gas (and synthetic gas usable for fuel) (CERCLA, Section 101[14], last sentence).

CERCLA Definition of Pollutant or Contaminant. Under CERCLA (Section 101[33]), a "pollutant or contaminant" can be any other substance not on the list of hazardous substances that "will or may reasonably be anticipated to cause" any type of adverse effects in organisms and/or their offspring. As with the definition of hazardous substance and hazardous waste, petroleum and natural gas are excluded (CERCLA, Section 101[33]).

Because of the broad scope of the definition of "hazardous substance" and "pollutant or contaminant," it is important to distinguish between "hazardous substances" and "pollutant or contaminants." First, although EPA can respond to either type of substance, private parties could be liable for cleanup costs and natural resources damages only if "hazardous substances" are involved. Second, private parties are liable for reporting certain "releases" only if "hazardous substances" are involved. With respect to most other major provisions of CERCLA, however, the distinction has no significant consequence.

To trigger the application of RCRA provisions, a substance must first be a "waste." Under CERCLA, however, the issue of whether a substance is a waste or a product (or some other definition) is irrelevant. The concept of "hazardousness" is much broader under CERCLA. Under RCRA, a waste must either be "listed" or meet one of the hazardous "characteristics" to trigger jurisdiction. In either case, the RCRA determination is based on concentrations of toxic constituents in some numerical threshold amount. Under CERCLA, however, the EPA says that a substance that contains any amount of a listed "hazardous substance" will trigger jurisdiction. The EPA's position has been upheld by the courts.

CERCLA Definition of "Release." A "release" is defined broadly to include a substance that can enter the environment in any way (e.g., "spilling, leaking, pumping," (CERCLA, Section 101[22]). There are four types of activities excluded from the definition: (1) workplace exposures (covered by the Occupational Safety and Health Act [OSHA]); (2) vehicular engine exhausts; (3) certain radioactive contamination covered by other statutes; and (4) the "normal" application of fertilizer (CERCLA, Section 101[22]). The phrase "federally permitted release" is used in reference to eleven types of releases specifically allowed under other environmental statutes (e.g., CAA, CWA) (Section 101[10][A]). For instance, any release in compliance with a National Pollutant Discharge Elimination System (NPDES) permit under the CWA is a "federally permitted release" (Section 101[10][A]). The distinction between a "federally permitted release" and other kinds of "releases" is analogous to the "hazardous substance" versus "pollutant or contaminant" distinction discussed above. That is, the EPA has full response and cleanup authority with respect to federally permitted releases; but private parties neither have liability for such releases, nor are they obligated to report them (CERCLA, Sections 107[j], 103[b][2]).

3.2.1.3 State of California Hazardous Substance Account Act

The enactment of CERCLA provided federal money for cleanup of hazardous sites, but it required that each state provide 10 percent of the funding for cleanup of sites within the state (42 U.S.C. Section 9604[c][3]). In response to the need for state funding, the California State Legislature enacted the Hazardous Substance Account Act (HSAA), which provides a mechanism to:

- Establish a program to provide for response authority for releases of hazardous substances, including spills and hazardous waste disposal sites that pose a threat to the public health or the environment

- Compensate persons, under certain circumstances, for out-of-pocket medical expenses and lost wages or business income resulting from injuries proximately caused by exposure to releases of hazardous substances

- Make adequate funds available to permit the State of California to assure payment of its 10 percent share of the costs mandated under Section 104(c)(3) of CERCLA [42 U.S.C. Section 9604(c)(3)]

In addition to providing funds for the state's 10 percent obligation at federal Superfund sites, the HSAA establishes a state "Superfund," the Hazardous Substance Account (HSA), and related authority under which sites in California could be listed and cleaned up, independent of federal law (Health and Safety Code, Sections 25330 *et seq*). The HSSA also created a limited program to compensate persons who had been harmed by hazardous substances for which no responsible party has been identified (Health and Safety Code, Section 25370-25382).

3.2.1.4 State and Federal Regulation of Municipal Solid Waste Landfills

Various requirements for the permitting, development, operation, and closure of Class III landfills are imposed by governmental agencies at the federal, state, and local levels. These regulations are discussed briefly here and are also discussed throughout Section 4 in the context of impacts. The requirements come in the form of statutes, regulations, and policies adopted by the agencies, and are enforced by permitting and approval processes established to ensure that landfills are properly designed and operated. The major discretionary approvals required by these agencies are summarized in Section 2 of this EIS/EIR. A common goal of all regulatory oversight is to ensure that adequate controls are in place to prevent landfills from having adverse impacts on public health, safety, or the environment.

CCR Title 14, Division 7, Chapter 3, establishes state minimum standards for solid waste handling and disposal. These regulations apply to Class III landfills and are enforced by the California Integrated Waste Management Board (CIWMB) and the Local Enforcement Agency (LEA). Disposal site operations as addressed in 14 CCR Article 7.5, which contains both prescriptive and performance standards for determining the frequency of the application of cover material to control vectors, odor, litter, and other nuisances. Specific landfill controls that relate to public health and safety include: nuisance controls, vector control, noise controls, odor control, and exclusion of hazardous waste from receipt at the landfill. These operating controls and standards are included within California's implementation of the federal Subtitle D regulations (40 CFR Part 258), discussed below.

Subtitle D of RCRA Landfill Standards—State Implementation. The proposed Class III landfill would be designed to meet or exceed state Class III standards, as defined under CCR, Title 23, Chapter 15, and to meet or exceed federal landfill regulations, as specified in 40 CFR Parts 257 and 258 (hereinafter referred to as Subtitle D).

Federal regulations released by the EPA on October 9, 1991 apply to landfills and landfill expansions to implement parts of Subtitle D. The Subtitle D regulations became effective on October 9, 1993. Major provisions of these regulations include location restrictions, facility design and operation criteria, groundwater monitoring and corrective action requirements, closure and postclosure care, and financial assurance requirements. States must develop programs to implement Subtitle D, and the EPA is required to determine whether the states have developed adequate programs. States with approved programs will have some flexibility to take local conditions into consideration in complying with the regulations.

California has received approval from the EPA to implement Subtitle D. The Regional Administrator for EPA Region IX has fully approved California's solid waste landfill regulatory program under Subtitle D. California's approved Subtitle D solid waste landfill program is implemented by legislative changes to the California Public Resources Code, by modifications to CCR Title 14, and by the State Water Resources Control Board (SWRCB) issuance of Resolution No. 93-62, Policy for Regulations of Discharges of Municipal Solid Waste.

3.2.1.5 California Surface Mining and Reclamation Act

Riverside County Ordinance No. 555 implements provisions of the state Surface Mining and Reclamation Act (Public Resources Code, Section 2710 et seq.). This ordinance requires issuance of a permit and approval of a reclamation plan of mined areas. Such a permit has been approved by the County for the Kaiser operation. Compliance with health and safety obligations were imposed upon Kaiser under Riverside County-approved Reclamation Plan No. 107 ("RP107"), since the suspension of active iron ore mining. One aspect of that plan involved the prevention of unauthorized access by the general public. This has been achieved, in part, by the construction of an 8-foot-high chain-link fence including three strands of barbed wire along the common boundary between the Eagle Mountain Townsite and the landfill industrial area. Access through the fence can be gained only at a locked gate with a security guard station.

Because of the mountainous terrain, the only additional potential routes of access lie along the eastern and the western property boundaries. In both cases, the access routes have been reduced to one unimproved roadway, and travel along both roadways onto the disturbed portion of the property is barred by heavy-duty, locked gates placed across each roadway. Kaiser employees are present on the property during the day throughout the week to prevent unauthorized access. Contract security guards patrol the boundaries at night throughout the week.

Electrical facilities in and about the pit areas consist of electrical distribution lines and substations that are currently out of service. The dielectric in the various electrical transformers at the substations has been analyzed for the presence of PCBs, and the devices have been appropriately labeled to reflect the results of those analyses. Some substations have been removed from the pit areas, and some devices have been appropriately shipped from the property for disposal. Some substations remain in place awaiting reassignment to future projects on the property. The remaining oil-filled electrical devices are inspected on a quarterly basis by Kaiser personnel.

The portion of the property consisting of unpatented mining and millsite claims, the camp site patent area which includes the plant and maintenance areas and the community, and those areas of other federal lands which have been included in the Kaiser/Bureau of Land Management land exchange have been the subject of two Level I hazardous material examinations conducted by the BLM without finding evidence of contamination. The patented mining claims and the fee simple lands purchased previously by Kaiser and included within the landfill specific area, with the exception of the campsite patent, have been the subject of a Level I hazardous materials examination conducted by Earth Systems Consultants without finding evidence of contamination. Selected sites within the landfill-specific plan area have been examined for the existence of hazardous materials by the California DTSC without finding evidence of contamination.

3.2.2 Eagle Mountain Mine

3.2.2.1 Bureau of Land Management's Level I Contaminant Survey

In September 1992, the Bureau of Land Management (BLM) completed a Level I Contaminant Survey Checklist (Serial Number CA 30070 FD) for approximately 3,512 acres of publicly owned lands surrounding the Eagle Mountain Mine operation that the BLM proposed to transfer to Kaiser (BLM, 1992). Figure 3.2-1 shows the areas addressed by the BLM Level I survey. In addition, the BLM conducted a similar survey on the Kaiser-owned lands offered to the BLM in the land exchange (see Figure 2-2 in Section 2). The purpose of the Level I Survey was to review these lands for indications of the potential presence of hazardous substances. The Level I survey noted that certain checklist items, such as storage tanks and machinery repair areas, were observed as indicators of the potential presence of hazardous substances on either the BLM properties that were surveyed (i.e., on the property proposed for use as a landfill) or on nearby lands. The survey report presents information obtained as the result of observations; no additional data are provided about the specific nature or location of the indicators observed.

Although the September 1992 Level I checklist noted that these indicators of the potential presence of hazardous substances had been observed on the properties surveyed, the survey further stated (Section G, Disposal Certification) that "No evidence or recorded information was found to indicate that any hazardous substance was stored for one year or more or disposed of or released on the property" (BLM, 1992). Subsequent to the 1992 investigation, revised Level I surveys were conducted on Kaiser-owned lands, offered to BLM in the land exchange, and on selected lands. These new investigations took place in April 1996. As with the previous Level I survey, the 1996 investigations found no evidence of hazardous substances or obvious signs of any effects of contamination on the offered or selected lands (BLM, 1996).

In addition, no subsequent, more detailed investigations (i.e., Level II and III surveys) to assess the potential for contamination were recommended by the BLM. As a result, Kaiser signed and attached to the Level I survey form a waiver and indemnification in favor of the BLM regarding any potential hazards or hazardous substances associated with these properties.

3.2.2.2 DTSC Complaint Inspection and Sampling Report

In December 1993, the County of Riverside Department of Environmental Health requested assistance from DTSC in the investigation of citizen complaints that hazardous waste had been disposed of illegally at the Eagle Mountain Mine. The citizen complainants alleged that hazardous waste had been improperly disposed of at the mine site. Some of these locations were on lands owned in-fee by Kaiser and some were on BLM federal lands. The alleged disposal locations addressed in the DTSC Complaint Inspection and Sampling Report (DTSC 1994[a]) are shown in Figure 3.2-2. The DTSC report (DTSC 1994[a]) and addendum

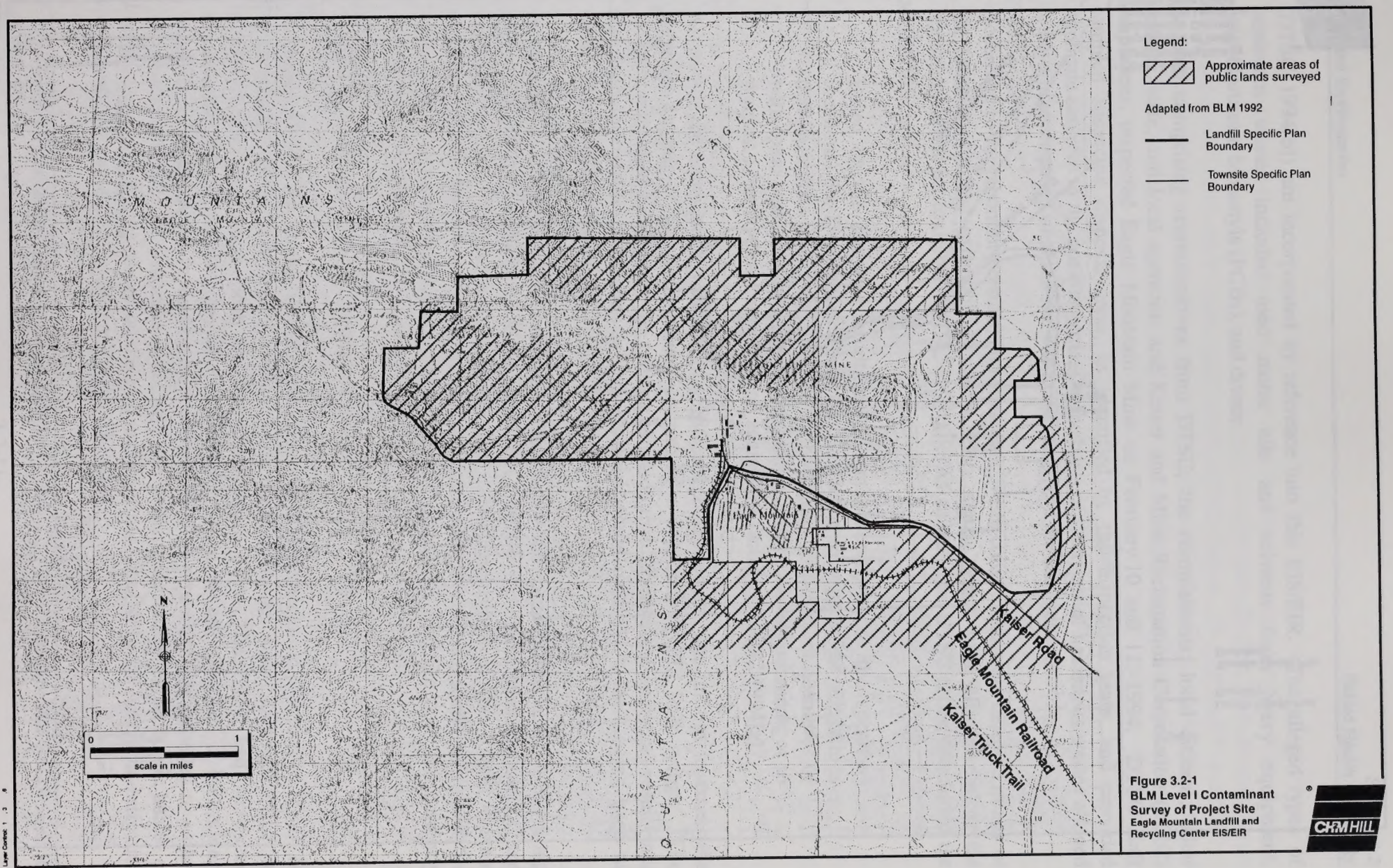


Figure 3.2-1
BLM Level I Contaminant Survey of Project Site
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 contam 6/96

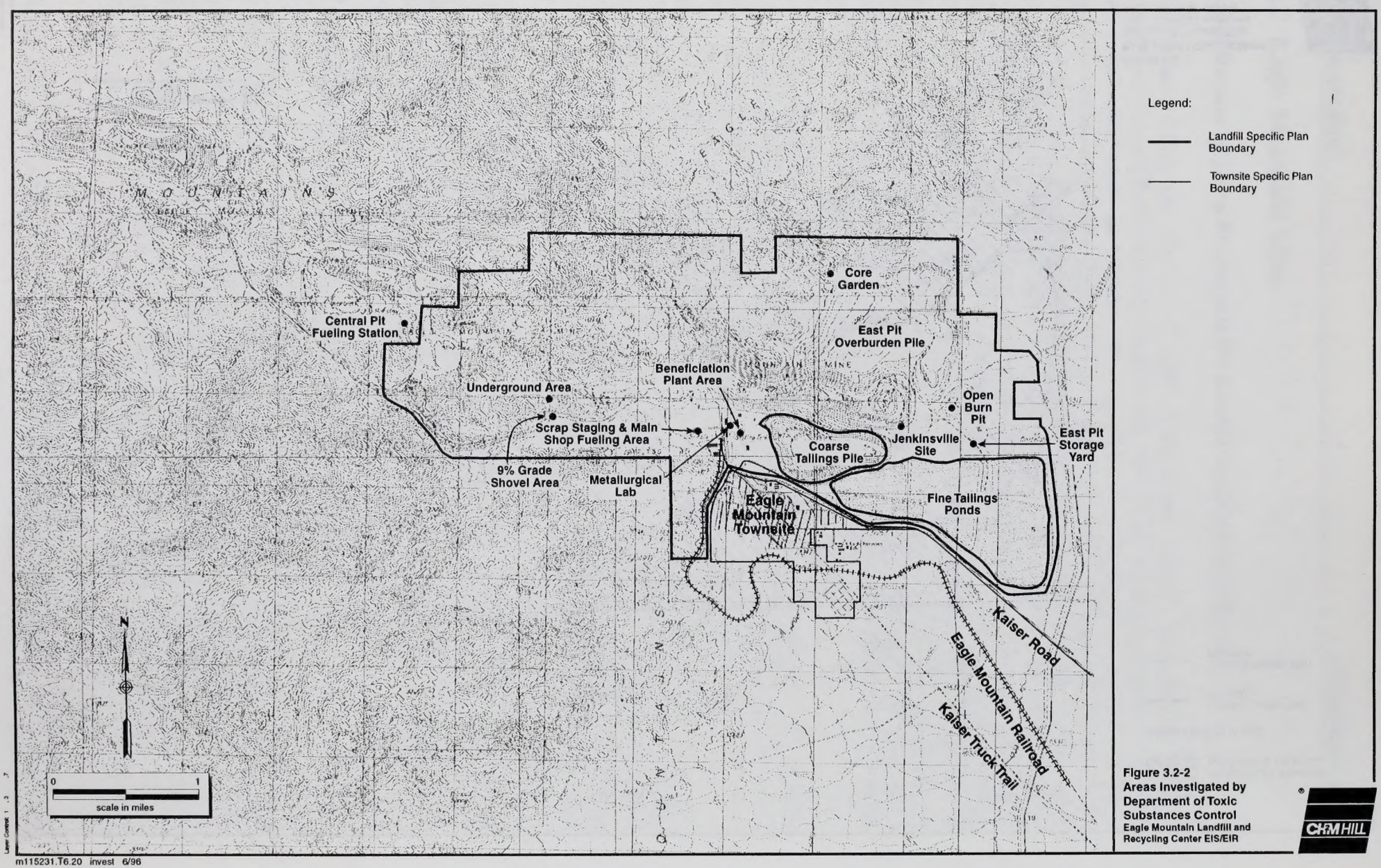


Figure 3.2-2
Areas Investigated by Department of Toxic Substances Control
Eagle Mountain Landfill and Recycling Center EIS/EIR

m115231.T6.20 invest 6/96

(DTSC 1994[b]) are incorporated by reference into this EIS/EIR. The alleged types of hazardous wastes included used motor oils and solvents from heavy equipment, polychlorinated biphenyls (PCBs), and drums.

A team comprising representatives from DTSC; the complainants; local citizens; other federal, state, and local agencies; and Kaiser and Mine Reclamation Corporation (MRC) employees, inspected Eagle Mountain Mine on February 10 and 11, 1994. DTSC staff sampled suspected disposal areas, as identified by the inspection team, and provided duplicate samples to the complainants. On the basis of the types of hazardous wastes alleged to have been disposed of at the site, the DTSC analyzed the samples.

According to the laboratory results, "no hazardous waste constituents were detected in any of the samples with the exception of native heavy metals which were all well below the regulatory levels for toxicity." (DTSC 1994[a]). As a result, the DTSC report concluded the following:

> Based on the sampling results and direct observations of the specified locations, the Department cannot find evidence to support the allegations that hazardous waste was disposed at the facility in sufficient quantities or with toxic characteristics so as to noticeably impact the environment, or to warrant a formal enforcement action against the facility. (DTSC 1994[a])

As part of the complaint investigation, DTSC also evaluated the fine tailings to assess the potential hazards of using the tailings as part of a proposed landfill liner system. The DTSC's published findings on the tailings conclude that "Neither the analytical results nor the regulatory status of the fine tailings material would preclude it from being used as Class III landfill liner material." (DTSC, 1994[a])

In response to supplemental information submitted by the complainants and minor editing changes, the DTSC prepared an addendum (DTSC, 1994[b]) to its complaint inspection and sampling report. The addendum stated that "The conclusions of the Report remain substantively the same," and summarized that "there was no evidence found to support the allegations that hazardous materials were illegally disposed. The site does not currently threaten the environment." (DTSC, 1994[b])

3.2.2.3 EPA Preliminary Assessment

In August 1994, EPA Region IX conducted a review of documentation provided by the BLM to determine whether the Eagle Mountain Mine required further action under CERCLA to identify, investigate, and clean up hazardous waste sites. The BLM had submitted documentation to the EPA to address the information requirements of a Preliminary Assessment (PA). A PA is the first step of the CERCLA process and is intended to gather information for EPA to determine whether a site poses sufficient potential public health or environmental risk to be placed on the National Priorities List (NPL) for further investigation and remedial response (i.e., cleanup) under CERCLA.

Because the Eagle Mountain Mine includes federal lands, the EPA conducted a Federal Facility PA Review, under Section 120 of CERCLA, using the services of its contractor, URS Consultants, to perform the review (URS, 1994). The results of the PA review concluded that the information provided by the BLM was sufficient for EPA to certify that the PA requirements had been met for the mine, and that no further action under CERCLA was warranted (EPA, 1994).

As noted in the April 11, 1995, Federal Register (60 FR 18474 and 18478), the Eagle Mountain Mine facility is presently listed on the Federal Agency Hazardous Waste Compliance Docket (Docket). The Docket was established by CERCLA §120 to provide a data listing of federal facilities (including federal lands) where either:

1. RCRA permits were in effect authorizing treatment, storage or disposal of hazardous wastes under Subtitle C of RCRA

2. A "release" under CERCLA §103(a) had been reported

3. EPA was notified under CERCLA §103(c) that hazardous substances had been stored, treated or disposed of, as well as facilities where releases were suspected to have occurred.

The Docket shows that the Eagle Mountain facility was reported under CERCLA 103(c).

The purpose of the Docket is to: (1) identify all federal facilities that must be evaluated to determine whether they pose a risk to human health or the environment, thus warranting placement on the NPL under CERCLA; (2) compile information submitted to EPA on federal facilities; and (3) provide a basis to make the information available to the public. Presently, there are 2,070 federal facilities listed on the Docket. Although there is no formal mechanism to remove facilities from the list on the basis of a PA finding, the no further action finding for the Eagle Mountain Mine PA has been included in the CERCLIS database, and EPA's official record will show that no further action is warranted.

3.2.2.4 UST Removal from Eagle Mountain Mine Site

On March 20, 1995, Kaiser obtained an Underground Storage Tank (UST) Closure/ Abandonment Application from the County of Riverside, Department of Environmental Health, for the removal of a single-walled, steel, 2,000-gallon UST. Following an approved workplan, on March 30, 1995, Kaiser removed the UST from an area of the site located approximately 200 feet northwest of the existing maintenance building. This UST had been used to store transmission fluid, hydraulic oil, and motor oil. Analysis of soil samples collected beneath the bottom of the UST during removal indicated that a release of hydrocarbons from the UST and associated piping had occurred in shallow soils surrounding and underlying the UST.

In May 1995, a UST removal report was submitted by Kaiser to the Department of Environmental Health that included a soils investigation workplan to assess the extent of hydrocarbons in shallow soils in the vicinity of the former UST. The Department of Environmental Health approved the soils investigation workplan. In August 1995, as part of the approved scope of work, two soil borings were drilled to 92 feet and 80 feet below ground surface (bgs) to assess the vertical extent of affected soils. Three shallow trenches were excavated in the vicinity of the former UST to assess the lateral extent of affected soils. A Soil Investigation Report was provided by Kaiser to the Department of Environmental Health on February 1, 1996, which indicated that soils at a depth of approximately 90 feet bgs were affected with total petroleum hydrocarbons (TPH) at concentrations ranging from 20 to 41,000 milligrams per kilogram (mg/kg).

Kaiser indicated in a March 27, 1996, letter to the Department of Environmental Health that the site should be considered for closure on the basis of the following technical rationale:

- Removal of the UST eliminated the original source of contamination
- Relatively low levels of only long-chain, high-molecular-weight petroleum hydrocarbons were detected in soils, and these hydrocarbons appear to be confined to depths above a soil-bedrock interface at approximately 90 feet bgs.
- Only low concentrations (1 ppm or less) of volatile organic compounds (VOCs) were detected in soils, and benzene (the "driver" in carcinogenic risk calculations and fate transport calculations) was not detected in any of the soil samples.
- Few if any of the VOCs will partition from the petroleum hydrocarbons in the soil and migrate to groundwater because of the low amount of VOCs present, the lack of soil moisture, and the fact that groundwater is located over 400 feet bgs.
- There is no net infiltration from rainfall at the site and, thus, no mechanism to cause significant downward migration of the petroleum hydrocarbons to groundwater.
- Results of a screening-level risk assessment indicated that the cumulative carcinogenic health risk at the site was far below the normally acceptable risk of one in one million.

The March 27, 1996, closure report request was forwarded by the Department of Environmental Health to the RWQCB, Colorado Region for its approval. Currently, the RWQCB is reviewing the closure request and Kaiser is actively communicating with the RWQCB on proposed final closure remediation scenarios, which include the installation of a low-permeability (asphalt) cap in the vicinity of the former UST. A cap would further preclude any downward migration of petroleum hydrocarbons to groundwater.

3.2.2.5 Summary of Eagle Mountain Mine Investigations

Based upon review of the onsite and historic record investigations of the Eagle Mountain Mine site discussed above, there is no evidence indicating a significant potential for inappropriate or unauthorized disposal of hazardous substances or hazardous wastes resulting from historic mining operations on or affecting the proposed Project site. In addition, the UST, which had been the source of low-level contamination, has been removed from the site, and the potential for adverse impacts to public health and safety from this contamination is minimal. In consideration of this lack of direct observed or reported evidence resulting from the BLM survey, the DTSC site visits and reports, and the EPA's PA, the existing Eagle Mountain Mine site does not represent a public health or environmental hazard resulting from previous disposal of hazardous substances or hazardous waste.

3.2.3 Townsite

The Eagle Mountain Townsite currently comprises residential housing and a limited number of commercial operations. As noted in Section 3.5, Land Use, nonresidential facilities in the Townsite include: (1) Kaiser's administrative offices; (2) a former gas station site that is presently used as a self-service laundry; and (3) the community correctional facility operated by Management and Training Corporation (MTC). Each of these facilities is expected to generate minor volumes of household hazardous wastes (e.g., cleaning solvents, paints, and maintenance products).

Although household hazardous wastes are excluded from regulation under RCRA and California law, homeowners throughout California are encouraged to dispose of these materials properly, and some communities sponsor programs and events to collect these household hazardous wastes for repackaging and disposal through a commercial hazardous waste disposal facility. AB 939 requires that each jurisdiction prepare a Household Hazardous Waste Element that outlines programs for reducing, recycling, and properly disposing of household hazardous waste. The Riverside County Comprehensive General Plan contains a Hazardous Waste Element (County of Riverside, 1988, pp. 365-366.25), that provides for a mobile household hazardous waste collection program under Chapter 12, Household Hazardous Waste. This program is consistent with the requirements of AB 939, which seeks to interdict household hazardous waste prior to disposal in Class III landfills. The mobile household hazardous waste collection program consists of a portable chemical storage container that is transported throughout the County. At each location, household hazardous waste is collected for a specified period of time, depending on expected local demand. A licensed contractor picks up all household hazardous waste for proper disposal before moving the container to the next location for approved household hazardous waste collection. Chapter 12 of the County's General Plan provides for the expansion of this mobile program if demand increases.

The Townsite currently does not contain any industrial or manufacturing businesses; existing commercial enterprises are directly related to residents associated with the limited mining-related activities or the correctional facility. No hazardous substances or wastes from manufacturing or industrial operations are generated at the Townsite. The underground fuel

storage tanks, which were present at the former gas station site, were properly excavated, removed, and disposed under permit in 1986. Prior to disposal, the integrity of these tanks was confirmed by leak testing. There was no evidence of leakage observed during removal.

3.2.4 Fires

The proposed Project site is located in an unincorporated area of Riverside County and, therefore, would be subject to the requirements of the County of Riverside Fire Department. Fire Station No. 80, which operates from a location adjacent to the correctional facility in the western portion of the Townsite, would be the responding engine company for the proposed Project area. An additional County of Riverside fire station (Station No. 49) exists in the nearby community of Lake Tamarisk.

The County of Riverside Fire Department is also the agency responsible for defining specific fire control requirements for the proposed Project. The local fire department would be responsible for protection of life and property by providing prevention, fire suppression, fire investigation, a hazardous materials response and rescue team, and related emergency services. State regulations, however, require a site operator to take adequate measures for prompt fire control (14 CCR, Div. 7, Sec. 17703 and Sec. 17495).

There have been no fires at the Townsite in the past 10 years. In December 1995, the Fire Department responded to a breach in a gas line but no fire occurred. The two most recent fires were reported at the mine site in 1987 and 1989. In 1994, fire station staff responded to 39 calls for medical aid (24 of the 39 calls were made by one individual).

3.2.5 Vectors

A vector is defined as any animal that is a potential carrier or transmitter of disease to human beings. Vectors that can be associated with improperly controlled solid waste disposal operations include rodents, birds, and insects. Non-native species of rodents, such as the brown (Norwegian) and black (roof) rats (*Rattus sp.*) and house mice (*Mus sp.*), are considered to be potential disease vectors that could be associated with solid waste disposal facilities. Flies and mosquitoes are also potential vectors. Flies typically are associated with exposed decomposing solid waste, whereas mosquitoes are associated with standing water.

3.2.6 Worker Safety

The Eagle Mountain Mine has ceased full-time mining operations, and staffing is limited to several employees who administer the site. Worker safety issues are limited to activities associated with the recovery and sale of large rock and aggregate. Kaiser has an ongoing worker safety program, as required by CCR Title 14, Division 7, Chapter 3.

Several sections of the state minimum standards for solid waste handling (CCR Title 14, Division 7, Chapter 3) address worker health and safety issues. Section 17670 requires that

operating and maintenance personnel wear and use approved safety equipment for personal health and safety, as determined necessary by the LEA. Section 17672 requires that personnel assigned to operate the site be adequately trained in subjects pertinent to site operation and maintenance, with emphasis on safety, health, environmental controls, and emergency procedures. It is the responsibility of the site operator to provide adequate numbers of qualified personnel to staff the site and deal effectively and promptly with matters of environmental controls, emergencies, and health and safety. The site operator is required to provide adequate supervision to ensure proper compliance with all applicable laws, regulations, permit conditions, and other requirements.

3.2.7 Public Safety

The collection and transport of municipal solid waste is a common occurrence in all neighborhoods, typically taking place at least once per week. Refuse disposal trucks occasionally are involved in accidents that could result in spillage of solid waste material. A potential health and safety hazard could occur to the public if exposed to the refuse or associated vectors that could be attracted to the spillage area.

Except for service to the local area, the proposed Project does not involve the typical refuse disposal trucks for delivery of refuse to Eagle Mountain; it would rely primarily on trains and to a lesser extent on conventional semitrailers to deliver solid waste to the landfill in standard intermodal transport containers. In this respect, the Project is similar to a standard rail transport operation, rather than a refuse collection service.

Unlike many standard rail operations, however, the solid waste transported for the Project would not be a hazardous material and would not be liquid or gaseous. Petroleum products, propane, and other combustible gases, chlorine, ammonia, acids, and other hazardous materials and hazardous wastes are commonly transported throughout Southern California every day. In the event of an accident, not only are these materials more hazardous than municipal solid waste, but they can also flow or spread over a wider area surrounding the accident site. Thus, the relative risks involved in transporting municipal solid waste are less than many other commonly transported materials.

As a general statement, the potential for accidents with trains is much less than for trucks. This is because trains operate within a controlled right-of-way, with automated gates and barriers at most major street crossings and in a system with better signaling and communication than traffic on the open highway or on city streets.

3.3 Traffic and Transportation

The existing conditions along the proposed rail and highway routes serving the proposed Project, which includes both the landfill and the Townsite, are presented in this section. Existing regional transportation in the vicinity of the Project comprises a network of railroads, roads, and highways. For the purposes of presenting existing conditions in this section and assessing impacts in Section 4.3, the discussion of traffic and transportation relies upon several methodological approaches. To provide context for both this section and Section 4.3, these terms are briefly described below. Additional source material for traffic and transportation is contained in Section 4.3 and in Appendix D of this EIS/EIR, *Traffic/Impact Analysis*.

- Level-of-service (LOS) is a qualitative measure describing operational conditions for a flow of traffic. These conditions account for speed, travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety.

- The hazard index is used to identify the relative estimated hazard among railroad grade crossings. Because of the relative nature of this index, it cannot be used to compare different crossings directly. It can, however, be used to compare conditions at the same crossing by taking into consideration different conditions such as average daily traffic, number of trains, and a coefficient based on the existing type of warning signal. The hazard index is not intended to identify specifically the high or low probability of accidents, nor is it meant to predict rail/vehicular traffic accidents resulting from increases in train activity.

- Railroad at-grade crossing delay time is used to evaluate the changes in delay time for a certain grade crossing from existing conditions to the conditions attributable to a proposed project. Components of calculating delay time include average daily traffic, number of lanes, train length and speed, an hourly factor (i.e., based on the time of day that a train crosses), and vehicle departure rate (i.e., a fraction of lane capacity and number of trucks in the vehicle queue). At-grade crossing delays can be measured in two ways: (1) average delay is the average amount of delay experienced by an individual vehicle during the passage of a single train; (2) total delay (or cumulative delay) is the total amount of delay experienced by all vehicles during the passage of a single train. For example, if 10 vehicles are delayed by passage of a train, and the average delay is 6 minutes, the total delay is 60 minutes, or 1 vehicle-hour.

3.3.1 Rail Route

This discussion of rail routes describes the characteristics of the rail lines and the potential routes that would be traveled by trains hauling waste to the Eagle Mountain Landfill. This section also estimates the current at-grade crossing delays caused by a train with characteristics similar to the trains proposed to haul waste to the proposed landfill. Finally,

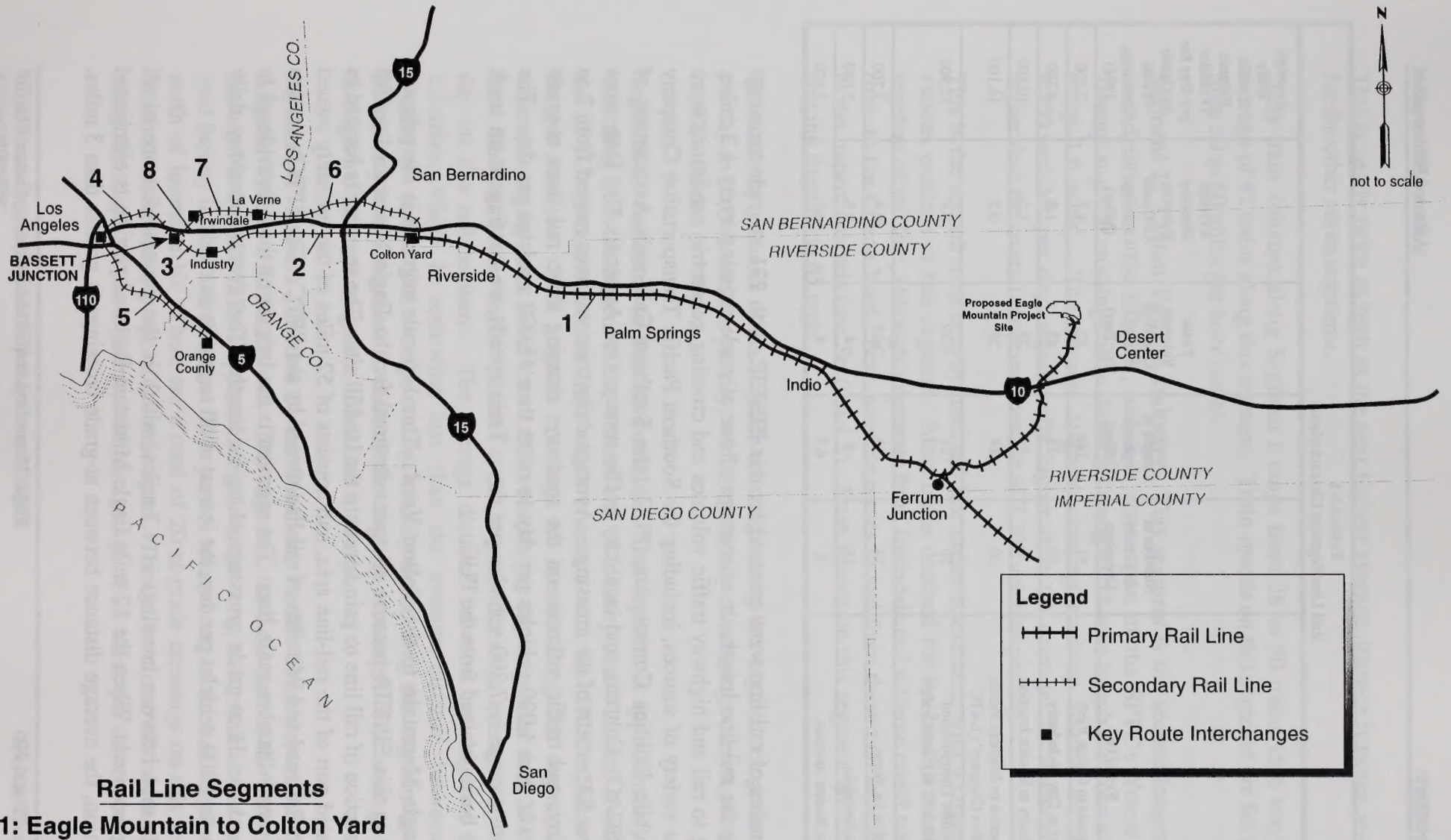
an existing-conditions relative hazard index is developed, incorporating the characteristics of the at-grade crossings and current traffic levels on both the highway and rail line at each crossing. This index identifies the relative estimated safety of the crossings applicable to the Project.

3.3.1.1 Rail Line Segments

The rail lines serving the areas used to assess existing conditions are shown in Figure 3.3-1. The rail line has been delineated into a total of eight discrete segments for the purposes of this assessment. The segments were identified on the basis of the locations of key junction points where trains would be switched on or off a particular route. Segment 1 is referred to as the primary segment because all trains destined for the Eagle Mountain Landfill would use this section of rail line to gain access to the landfill site. Segments 2 through 8 are referred to as the secondary segments. The segments are:

- Segment 1: Eagle Mountain to Colton Yard
- Segment 2: Colton Yard to City of Industry
- Segment 3: City of Industry to Bassett Junction
- Segment 4: Bassett Junction to the Southern Pacific's Los Angeles Transportation Center (LATC)
- Segment 5: Southern Pacific Transportation Company's Los Angeles Transportation Center to Northern Orange County
- Segment 6: Colton Yard to La Verne
- Segment 7: La Verne to City Irwindale
- Segment 8: Irwindale to Bassett Junction

The existing use and characteristics of the rail line segments are discussed individually, and Table 3.3-1 summarizes the most important characteristics of each segment. The characteristics of the at-grade crossings are discussed within the individual segment descriptions. Appendix D of this EIS/EIR contains a comprehensive listing of the existing conditions at all at-grade crossings.



Rail Line Segments

1: Eagle Mountain to Colton Yard
2: Colton Yard to City of Industry
3: City of Industry to Bassett Junction
4: Bassett Junction to SPTC's LA Transportation Center
5: SPTC to Orange County
6: Colton Yard to La Verne
7: La Verne to City of Irwindale
8: City of Irwindale to Bassett Junction
SPTC = Southern Pacific Transportation Company

Figure 3.3-1
Rail Line Analysis Segments
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

Table 3.3-1
Rail Line Segment Characteristics

Segment	From/To	Number of At-Grade Crossings	Length of Segment (Miles)	Train Volumes (One Way Trips Per Day)	Average Distance Between At-Grade Crossings (Miles)	Average Daily Traffic Volume (Vehicles per Day for At-Grade Total Crossings, 1996)
1	Eagle Mountain to Colton Yard	31	146	42	4.7	2,200
2	Colton Yard to City of Industry	20	33	43	1.6	8,700
3	City of Industry to Bassett Junction	9	11	28	1.2	10,100
4	Bassett Junction to Southern Pacific Transportation Company's LATC	20	14	28	0.7	14,100
5	Southern Pacific Transportation Company's LATC to North Orange County	50	21	4-30	0.4	12,900
6	Colton Yard to La Verne	74	30	2-28	0.4	3,700
7	La Verne to Irwindale	19	9	4	0.5	3,000
8	Irwindale to Bassett Junction	8	4.5	4	0.6	7,600

A total of 268 miles of rail line were assessed for this EIS/EIR, with 231 at-grade crossings identified along the rail-line length, or an average of one at-grade crossing every 1.2 miles. Data pertaining to rail and highway traffic volumes and crossing geometric conditions were obtained from a variety of sources, including the Southern Pacific Transportation Company (SPTC), the Public Utilities Commission (PUC), the Southern California Association of Governments (SCAG), Caltrans, and local city traffic surveys (see Appendix D). Data were obtained for over 97 percent of the crossings. Average daily train volumes ranged from 2 to 43 trains per day, and traffic volumes on the roadways crossing these rail lines at-grade ranged from fewer than 1,000 vehicles per day to more than 43,000 vehicles per day. The overall observed average is 7,200 vehicles per day. Train speeds are contingent on track design and have been obtained from the PUC.

Segment 1: Eagle Mountain to the Colton Yard. This 146-mile segment is the primary area of interest in this EIS/EIR because all trains destined for the Eagle Mountain Landfill would use this section of rail line to gain access to the landfill site. The segment is located in the least populated part of the rail-line area, and consists of 52 miles of the privately owned Eagle Mountain Railroad and 94 miles of rail line owned by the SPTC. The SPTC's section is part of the Yuma/Alhambra main line. The segment is the longest of those considered in this EIS/EIR, and has 31 at-grade crossings along its length. The average roadway daily traffic volume was 2,200 vehicles per day, the lowest of all segments studied.

The average distance between crossings is 4.7 miles, which is the greatest distance of all segments being assessed. When the 52-mile Eagle Mountain Railroad portion is eliminated from consideration, the average distance between at-grade crossings is greater than 3 miles.

This is nearly twice as high as the next highest average distance between at-grade crossings for the other seven segments.

Daily train volumes along Segment 1 range from 28 to 50 trains (one way) daily with an average of 42 trains along this segment. Train speeds on this segment are fairly high, ranging from 30 to 60 miles per hour (mph).

Segment 2: Colton Yard to Industry. This segment is the second longest section under consideration in this EIS/EIR, and it is also a part of the SPTC's Yuma/Alhambra line. Twenty at-grade crossings were identified along its 33-mile length (i.e., one at-grade crossing every 1.6 miles). The average at-grade crossing roadway volume on this segment is 8,700 vehicles per day, significantly higher than the average for Segment 1 and slightly higher than the overall observed average of 7,200 vehicles per day.

This is the second most heavily used rail line under assessment, with 43 trains per day using various portions of this segment. Most trains destined for the landfill would also use this segment of rail line, although shipments from Irwindale or La Verne could travel an alternate route to the Colton Yard. Both possible routes to and from these two locations are assessed in the impact analysis (see Section 4.3). Train speeds on this segment are consistently high, ranging from 60 to 65 mph.

The roadway volumes at the at-grade crossings along this segment range from 900 vehicles per day to 20,000 vehicles per day, with the majority of crossings carrying between 4,000 and 10,000 vehicles per day.

Segment 3: Industry to Bassett Junction. This segment is approximately 11 miles long, extending from the eastern to the western end of Industry near Vineland Avenue. It is part of the SPTC's Yuma/Alhambra line, which connects with the SPTC's Baldwin Park line at Bassett Junction. Nine at-grade crossings are located along this segment, with roadway volumes ranging from fewer than 1,000 vehicles per day to greater than 28,000 vehicles per day. Daily vehicular traffic volumes at the at-grade crossings averaged 10,100 vehicles per day on this rail segment. The average distance between crossings on this segment is 1.2 miles, which is somewhat less than the average distance between crossings on Segments 1 and 2. The average number of daily trains along this segment is consistent, with 28 trains per day reported at each of the at-grade crossings. The average train speed for through-traffic on this segment of rail line is 60 mph.

Segment 4: Bassett Junction to the Southern Pacific Transportation Company's Los Angeles Transportation Center. This segment, the final part of the Alhambra/Yuma line included in this EIS/EIR, is approximately 14 miles long, and terminates at the SPTC's major yard facility in East Los Angeles. This yard is located east of the Los Angeles River channel north of Interstate 10. There are a total of 20 at-grade crossings on this segment, each of which is located an average of 0.7 mile apart. The daily volume of train traffic is consistent along the length of this segment, with an average of 28 trains per day reported at each of the

at-grade crossings. Train speeds begin to drop on this segment, ranging from 60 mph down to 20 mph.

Roadway traffic volumes at the at-grade crossings located along this segment are somewhat higher than the roadway volumes previously discussed. These volumes range from a low of 2,000 vehicles per day to more than 30,000 vehicles per day at several crossings. The 14,100 vehicles per day average for at-grade crossings along this segment is the highest of the segments considered in this EIS/EIR.

Segment 5: The Southern Pacific Transportation Company's Los Angeles Transportation Center to Northern Orange County. This segment is 21 miles long and comprises sections of the SPTC's San Pedro and Santa Ana lines. The total of 50 at-grade crossings identified results in an average of only 0.4 mile between crossings, the lowest of all segments studied. The roadway traffic volumes at the at-grade crossings are also relatively high, ranging from fewer than 1,000 vehicles per day to more than 43,000 vehicles per day, the highest volume of roadway traffic among the segments studied. The average at-grade crossing vehicular volume on this segment is 12,900 vehicles per day, second highest of the segments studied.

Train speeds along this segment are generally low, ranging from just 10 mph at the north end of the segment to a high of 20 miles per hour at the southern end of the segment. The average daily number of trains ranges from 4 to 30 trains per day, with most crossings experiencing 10 to 12 train crossings per day.

Only trains to and from northern Orange County would use this segment. The last at-grade crossing included on the segment is at Stanton Avenue in Buena Park. The next at-grade crossing on the Santa Ana line is at Loara Street in Anaheim, a distance of 4.5 miles.

Segment 6: The Colton Yard to La Verne. There are a total of 74 at-grade crossings along this 30-mile length of rail line, or one crossing every 0.4 mile. The average vehicular traffic volume for at-grade crossings along this segment is 3,700 vehicles per day, well below the overall observed average of 7,200 vehicles per day. The number of trains traveling this segment is among the lowest in the area under review. Between 2 and 28 trains per day traverse the various at-grade crossings along this segment, with only two trains per day at most crossings. Train speeds are only 10 mph on this segment.

Segment 7: La Verne to Irwindale. This segment of rail line is only 9 miles long, and could be used by shipments from Irwindale (eastbound) or La Verne (westbound). The traffic volumes at the at-grade crossings on this segment are again lower than the overall study area average. The average along this segment is 3,000 vehicles per day, lower than any other segment except Segment 1. There are a total of 19 at-grade crossings along this 9-mile segment of railroad, or an average of two at-grade crossings per mile along this segment, resulting in a ranking of third among the segments analyzed. Train traffic along this segment is consistent, with an average of four trains per day reported at each of the at-grade crossings. Travel speed on this segment of rail line is 10 mph.

Segment 8: Irwindale to Bassett Junction. This segment, which is only 4.5 miles in length, connects the Baldwin Park line of the SPTC's rail network to the Alhambra/Yuma line. Use of this segment would be similar to that described above for Segments 6 and 7, with shipments possible from either Irwindale or La Verne. The average traffic volume at the eight at-grade crossings along this segment is 7,600 vehicles per day, which is slightly higher than the overall observed average of 7,200 vehicles per day. The at-grade crossings are an average of 0.6 mile apart, approximately half the average distance of the segments discussed in this EIS/EIR. Train traffic along this segment averages four trains per day. Train speed along this segment is limited to 20 mph along the entire 4.5-mile-long segment.

3.3.1.2 Existing At-Grade Crossing Delays

Under existing conditions, most crossings experience at-grade crossing delays of limited duration (i.e., fewer than 30 minutes of total delay for all vehicles) when a train crosses a roadway. The description of delays in this section and in the analysis in Section 4.3 focuses on the at-grade crossings located along the primary study segment (i.e., Segment 1), and includes all at-grade crossings along other segments where a total of at least 30 minutes of vehicle delay would occur under existing conditions during the passage of a typical refuse train. This is the equivalent of the delay at a minor signalized intersection, serving 1,000 vehicles during a single peak hour, operating at LOS A (i.e., excellent operating conditions), with only 2 seconds of delay for each vehicle. On rail segments where none of the at-grade crossings met this criterion, at least two at-grade crossings with the highest levels of delay on that segment were included in the analysis. The existing crossing locations along the primary segment (i.e., Segment 1) in the desert area of Riverside County are shown in Table 3.3-2.

Along the primary segment, the total delay for all rail crossings caused by the passage of a single train with the proposed configuration of the unit trains traveling to the site is 129.6 minutes (or 2.16 vehicle-hour). The maximum total delay at a single crossing is approximately 15.4 minutes at Dillon Road in Indio in Segment 1. In general, the typical time a single vehicle is delayed is 1 minute.

Total delays at crossings along other segments range as high as 520 minutes (Slauson Avenue on Segment 5), where a total of more than 990 vehicles are delayed by the passage of a single unit train (i.e., a train with an average length of 8,000 feet) and cause an average delay of 0.52 minutes for each vehicle affected by a train's passage. Although the Slauson Avenue crossing is not the highest volume crossing in the area under review, a combination of low train speeds and fairly high traffic volumes (i.e., average daily traffic at this crossing is 30,400) results in the highest overall delay of any crossing in the study area. Based on this existing conditions analysis, a total of 231 crossings are analyzed in Section 4.3 of this EIS/EIR. This total represents all 31 crossings along the primary segment and 200 locations along other segments within the study area.

Table 3.3-2
Existing At-grade Crossing Locations Along Southern Pacific Railroad

Community	Crossing Location	Description
Mecca	Highway 195/Avenue 66	Lights and crossing arms
	Avenue 62	Lights and crossing arms
	Avenue 58	Lights and crossing arms
Thermal	Airport Boulevard	Lights and crossing arms
	Avenue 54	Lights and crossing arms
Coachella	Tyler Street/Avenue 52	Lights and crossing arms
	Fifth Street	Lights and crossing arms
	50th Avenue	Lights flashing lights
	Dillon Road	Lights and crossing arms
Indio	Auto Center Drive	Overpass
	Jackson Street	Overpass
	Monroe Street	Overpass
	Jefferson Street	Overpass
Cabazon	Broadway Avenue	Lights and crossing arms
	Apache Trail	Lights and crossing arms
Banning	Hargrave Street/Highway 243	Lights and crossing arms
	San Gorgonio Avenue	Lights and crossing arms
	8th Street	Underpass
	22nd Street	Lights and crossing arms
	Sunset Avenue	Lights and crossing arms
Beaumont	Highland Springs Avenue	Underpass
	Pennsylvania Avenue	Lights and crossing arms
	Beaumont Avenue	Overpass
	California Street	Lights and crossing arms
	Viele Avenue	Lights only
	Highway 60	Overpass
Palm Desert	Washington	Overpass
	Monterey	Overpass
Rancho Mirage	Ramon	Overpass
Cathedral City	Date Palm	Overpass
Palm Springs	Indian Canyon	Lights and crossing arms
Highway 111	Highway 111	Overpass

3.3.1.3 Rail Line Existing Conditions Relative Hazard Index

A relative hazard index has been calculated for each of the 31 at-grade crossings on the primary rail segment (i.e., Segment 1) and the 200 rail segment crossings for the secondary segments (i.e., Segments 2 through 8) included in the delay analysis; these locations are also likely to involve the greatest number of conflicts between trains and vehicular traffic because of the greater numbers of trains and vehicles at these crossings. The relative hazard index, which identifies the relative estimated safety of rail-line crossings, is discussed in detail in Appendix D of this EIS/EIR.

The actual values of the calculated hazard indices for existing conditions range from 300 to 170,238. The maximum value of the hazard index occurs at Slauson Avenue on Segment 5 (H = 170,238). The type of protection at this location is warning signage, and an average of 28 trains and 30,400 vehicles per day use this crossing.

The highest hazard index value on Segment 1 is at Dillon Road (H = 33,712). The second highest hazard in Riverside County is at 22nd Street in Banning (H = 32,950). The existing protection at these crossings is gate protection, which is the safest form of protection at an at-grade crossing. The highest hazard location in Riverside County not protected by gates is found at 50th Avenue in Coachella (H = 12,020). This location currently uses flashing lights for protection. For San Bernardino County, all railroad crossings are either grade separated or gate protected. (The highest calculated hazard index in San Bernardino County is at Euclid Avenue [H = 120,634] with Milliken Avenue [H = 57,025] second.) Again, both crossings are gate protected.)

3.3.2 Truck Routes

This section discusses the highway network that would be used to gain access to the landfill. Existing roadway geometrics are described, with particular attention to truck-related characteristics, such as tight-turning and narrow-width lanes. This section presents LOS definitions for signalized and unsignalized intersections, describes existing traffic volumes in the vicinity of the Project site, and analyzes current peak hour operating conditions. The peak hour is defined as the 60-minute period during the day when traffic volume is greatest.

3.3.2.1 Existing Geometrics and Traffic Volumes

As previously mentioned, truck traffic to the Project site will be generated from a variety of areas. Interstate 10 is the first route where all truck trips to the Project site will converge and, therefore, is one major focus of the analysis. The other key routes are Eagle Mountain Road, Kaiser Road, Desert Center/Rice Road, and Ragsdale Road. This roadway network would also comprise the primary "back-up" mechanism in the event of a rail system disruption. A description of the physical and operational characteristics of each route is presented below. Figure 3.3-2 displays Average Daily Traffic (ADT) volumes associated with each route. These counts were taken during the month of August 1995, except for the freeway volumes, which were counted by Caltrans in 1994. In addition, vehicle classification counts were taken on Eagle Mountain Road and Desert Center/Rice Road to determine the number and percent of vehicles that use these two facilities. For the purpose of this EIS/EIR, the minimum criterion to be considered as truck traffic is for a vehicle to be equal to or greater than a two-axle, six-tire classification.

Turning movement counts were conducted during the hours of 7 a.m. to 9 a.m. and 4 p.m. to 6 p.m. on Tuesday, August 1, 1995, at the following locations:

- Desert Center/Rice Road/Interstate 10 Eastbound Ramps
- Desert Center/Rice Road/Interstate 10 Westbound Ramps
- Eagle Mountain Road/Interstate 10 Eastbound Ramps
- Eagle Mountain Road/Interstate 10 Westbound Ramps
- Eagle Mountain Road/Ragsdale Road

The traffic counts are included in Appendix D of this EIS/EIR.

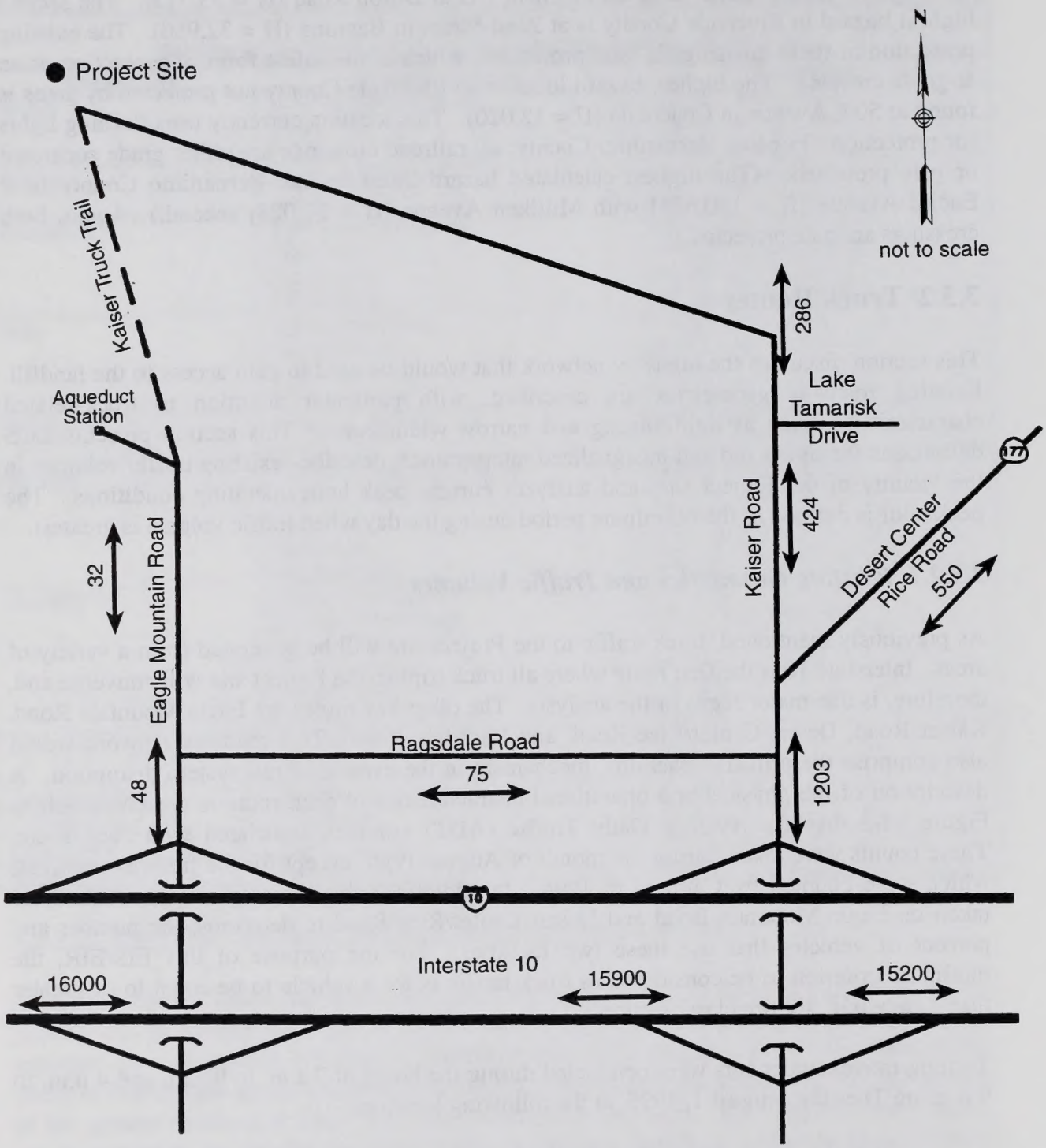


Figure 3.3-2
Existing (1995) Average Daily Traffic
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

Interstate 10 Freeway. This freeway extends from the Los Angeles area through a portion of San Bernardino County into Riverside County. It passes the vicinity of the Project site approximately 50 miles west of Blythe, 60 miles east of Indio, and approximately 11 miles south of the Project site. It is the major access route for all automobile and truck traffic originating at, or destined for, the Project site. Access to the Eagle Mountain/Desert Center area is provided via two full-diamond interchanges (i.e., on and off ramps in both the eastbound and westbound directions) with Eagle Mountain Road and Desert Center/Rice Road. Near the site, Interstate 10 has two lanes in each direction, and carries an average daily traffic volume of 16,000 vehicles, with a peak hour volume of 1,450 vehicles (Caltrans, Traffic Volume Census, 1994).

Eagle Mountain Road. As currently proposed, Eagle Mountain Road would be the main surface roadway access route for truck traffic between Interstate 10 and the Project site. The road extends from south of Interstate 10 to Kaiser Truck Road and the Eagle Mountain Aqueduct station located approximately 7 miles north of the freeway. A full-diamond interchange (i.e., on and off ramps in both the eastbound and westbound directions) is provided at Interstate 10. Eagle Mountain Road is not a through road south of the freeway. Under the freeway overcrossing, it carries one lane in each direction within a 40-foot, curb-to-curb cross section. North of the westbound ramps, it narrows to 32 feet, curb-to-curb. Ragsdale Road intersects Eagle Mountain Road in a "T" intersection immediately north of the westbound freeway ramps. The existing traffic volumes on Eagle Mountain Road and the freeway interchange are very low because the roadway primarily serves only traffic related to operation and maintenance of the Colorado River Aqueduct. The average daily traffic volume on Eagle Mountain Road north of the freeway ramps is 48 vehicles; north of Ragsdale Road it decreases to 32 vehicles.

Kaiser Road/Desert Center Rice Road Interchange. Kaiser Road extends from north of the freeway to the proposed Project site approximately 11 miles from the freeway. Kaiser Road intersects Desert Center/Rice Road north of the freeway. Access to Kaiser Road from the freeway is provided by the Desert Center/Rice Road interchange. Under the freeway overcrossing, the roadway is 40 feet wide, curb-to-curb. The average daily traffic volumes at the interchange and on Kaiser Road are considerably higher than Eagle Mountain Road because of traffic related to the services in Desert Center, the residential population of Lake Tamarisk (approximately 200 people) and Desert Center (approximately 280 people), the operations at the Eagle Mountain mine site, and existing school operations. Between Ragsdale Road and the freeway, Desert Center/Rice Road carries 1,203 vehicles per day. Between Desert Center/Rice Road and Lake Tamarisk Drive, Kaiser Road carries 424 vehicles per day; and north of Lake Tamarisk Drive it carries 286 vehicles per day.

Ragsdale Road. Ragsdale Road is a short, approximately 3-mile, two-lane roadway that connects Eagle Mountain Road with Kaiser Road. It runs immediately north of and parallel to Interstate 10. It is 36 feet wide, except at several bridges where it narrows to 24 feet. Ragsdale Road carries an average of 75 vehicles per day.

Existing Roadway Segment Operations. Calculations for roadway segments have been performed for: (1) Eagle Mountain Road north of Ragsdale Road; (2) Kaiser Road north of Desert Center/Rice Road; and (3) Kaiser Road north of Lake Tamarisk Drive. LOS definitions for roadway segments (i.e., unassigned intersections) are summarized in Table 3.3-3. The results, which are summarized in Table 3.3-4, indicate that acceptable operations exist on all of these roadway segments.

Table 3.3-3
Level of Service Definitions for Roadway Segments
(Unsignalized Intersections)

Level of Service	Traffic Flow Characteristics
A	Average delay per vehicle ranges between 0 and 10 seconds. Nearly all drivers find freedom of operation. Very seldom is there more than one vehicle in the queue.
B	Average delay per vehicle ranges between 10 and 20 seconds. Some drivers begin to consider the delay an inconvenience. Occasionally there is more than one vehicle in the queue.
C	Average delay per vehicle ranges between 20 and 30 seconds. Many times there is more than one vehicle in the queue, and most drivers feel restricted, but not objectionably so.
D	Average delay per vehicle ranges between 30 and 40 seconds. Often there is more than one vehicle in the queue, and drivers feel quite restricted.
E	This represents a condition in which the demand is near or equal to the probable maximum number of vehicles that can be accommodated by the movement. Average delay per vehicle ranges between 40 and 60 seconds. There is almost always more than one vehicle in the queue, and drivers find the delays to be approaching intolerable levels.
F	This represents an intersection failure condition that is caused by geometric and/or operational constraints external to the intersection. In this situation, traffic flows are forced.

Table 3.3-4
1995 Existing Conditions
Roadway Segment Level of Service (LOS) Analysis Summary

Segment	Volume (Peak Hour)	Level of Service
Eagle Mountain Road north of Ragsdale Road	6 (12:45 - 1:45 PM)	A
Kaiser Road north of Desert Center Rice Road	41 (8:45 - 9:45 AM)	A
Kaiser Road north of Lake Tamarisk Drive	26 (12:30 - 1:30 PM)	A

Existing Intersection Operations. The intersections most likely to be affected by truck and automobile traffic related to the Project are Eagle Mountain Road-Ragsdale Road; Eagle Mountain Road-Interstate 10 interchange; and Desert Center/Rice Road-Interstate 10 interchange. LOS definitions for signalized intersections are summarized in Table 3.3-5, Table 3.3-6 depicts the results of the intersection analysis for the existing conditions. All of the study intersections addressed in this EIS/EIR operate at LOS A for both the morning and evening peak hours.

The LOS analysis for the interchanges of Interstate 10 with Eagle Mountain Road and Desert Center/Rice Road indicates that LOS A (i.e., excellent conditions) exists for all movements during the peak hour. The intersection of Eagle Mountain Road-Ragsdale Road is also operating at LOS A. Traffic operations analysis worksheets are included in Appendix D.

Table 3.3-5
Level of Service Definitions for Signalized Intersections

Level of Service	Traffic Flow Characteristics
A	Very low average stopped delay, less than 5 seconds per vehicle. This occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	Average stop delay is in the range of 5.1 to 15.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
C	Average stopped delay is in the range of 15.1 to 25.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	Average stopped delays are in the range of 25.1 to 40.0 seconds per vehicle. The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle length, or high volume/capacity ratios. Many vehicles stop and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Average stopped delays are in the range of 40.1 to 60.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume/capacity ratios. Individual cycle failures are frequent occurrences.
F	Average stop delay is in excess of 60 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation. It may also occur at high volume/capacity ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may be major contributing causes to such high delay levels.

Note: A signal cycle failure is considered to occur when one or more vehicles are forced to wait through more than one green signal indication for a particular approach.

Table 3.3-6
1995 Existing Conditions
Intersection Level of Service (LOS) Analysis Summary

Segment	LOS A.M. Peak Hour	LOS P.M. Peak Hour
Eagle Mountain Road/I-10 EB Ramp	A	A
Eagle Mountain Road/I-10 WB Ramp.	A	A
Eagle Mountain Road/Ragsdale Road	A	A
Desert Center/Rice Road/I-10 EB Ramp	A	A
Desert Center/Rice Road/I-10 WB Ramp	A	A

EB: Eastbound
WB: Westbound
I-10: Interstate 10

3.4 Air Quality

This section presents the existing conditions for air quality. A more detailed discussion is included in Appendix E, Air Quality Impact Section for the Eagle Mountain Landfill and Recycling Center of this EIS/EIR, including a discussion of air quality in other Southern California air basins.

3.4.1 Geography and Topography

The proposed Project is located in northeastern Riverside County and is bordered on the north by the northeastern ridge of the Eagle Mountains, on the east by Chuckwalla Valley, on the South by the Townsite and on the west by the Eagle Mountains. Joshua Tree National Park (JTNP) is approximately 1.5 miles north, west, and southwest of the Project.

The Project site is located in the Southeast Desert Air Basin (SEDAB), which is composed of the eastern parts of San Bernardino, Riverside, Kern, and Los Angeles Counties, and all of Imperial County. Figure 3.4-1 shows the SEDAB boundaries relative to the Project site.

3.4.2 Climate and Meteorology

The SEDAB contains some of the hottest and driest areas of California. The seasons are generally marked by differences in temperature rather than substantial differences in rainfall. Average monthly temperatures at Eagle Mountain range from about 54°F in January to 94°F in July. The average monthly high temperature ranges from over 64°F in January to about 105°F in July, and the mean monthly low temperature ranges from about 45°F in January to about 83°F in July. Average annual precipitation for the Project site totals approximately 3.8 inches.

Wind patterns in the area of the Project site are shown in Figure 3.4-2, which is a wind rose for the onsite weather station. Westerly winds predominate at the site. Winds are typically persistent; about 9 percent of the winds are from due west, almost 22 percent come from the west-southwest through west-northwest, and approximately 38 percent come from the southwest through the northwest. On the average, 20 to 30 frontal systems move into the northern part of the basin each winter.

Most of the precipitation received in the SEDAB is associated with this winter frontal activity. The relative humidity in summer is very low, averaging 30 to 50 percent in early morning and 10 to 20 percent during late afternoon. During the hottest part of the day, humidities below 10 percent are common.

3.4.3 Existing Air Quality and Trends

The EPA has set national ambient air quality standards (NAAQS) for ozone, nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), 10-micron particulate matter (PM_{10}),

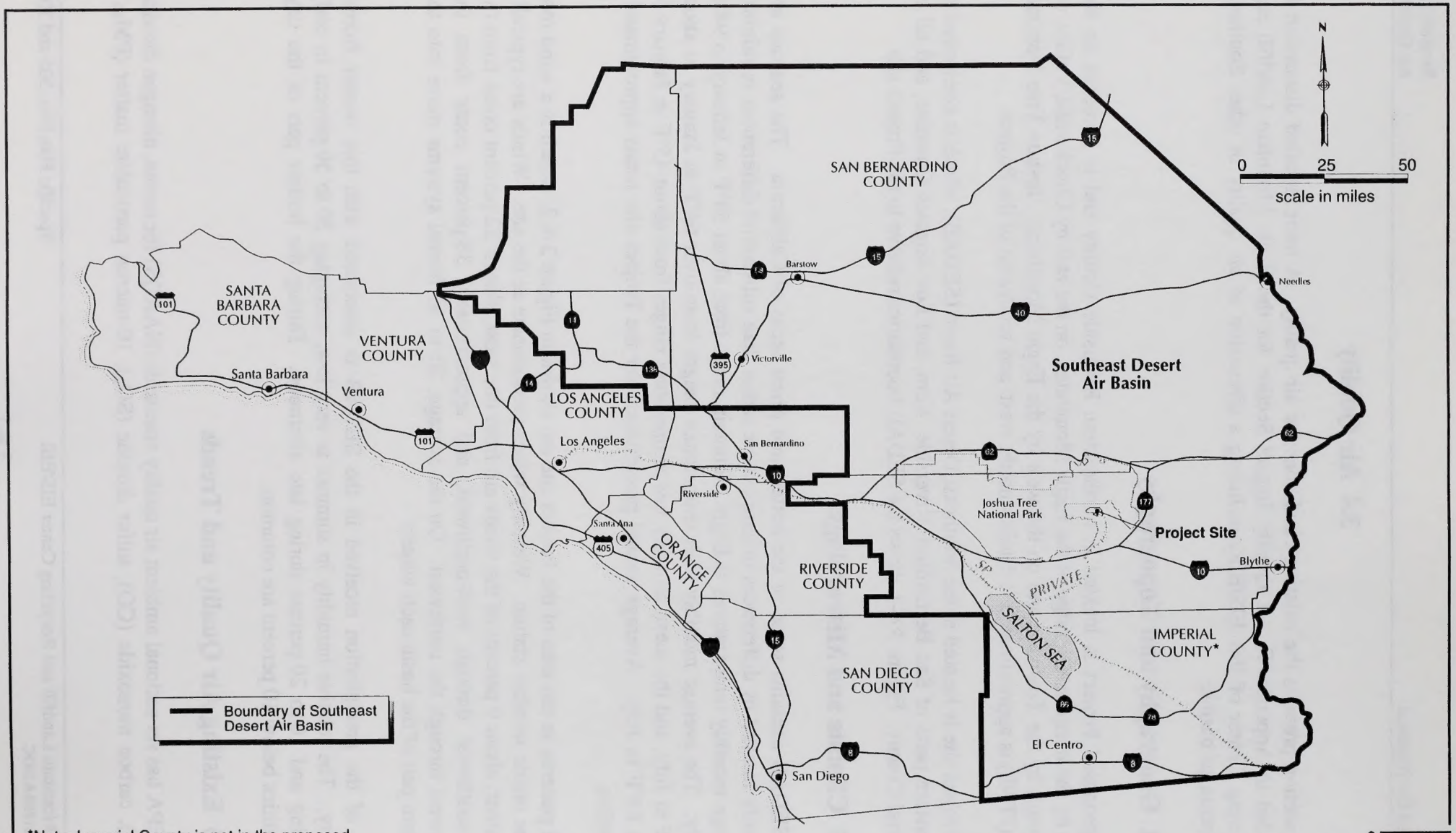


Figure 3.4-1
Southeast Desert Air Basin
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

3.4-2

m115231.T6.20 AQmap 6/96

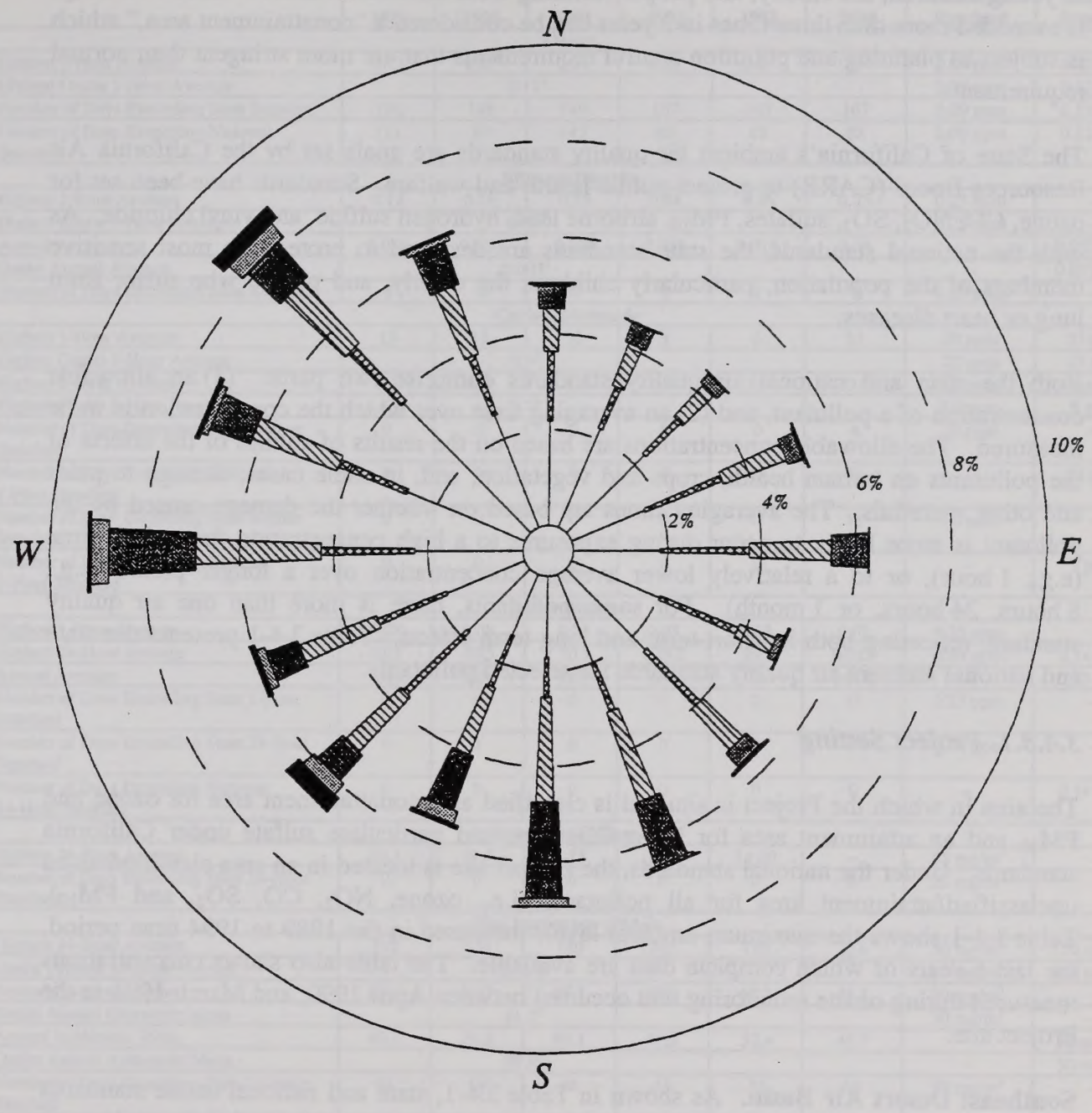


Figure 3.4-2
Wind Speeds, 1990-91
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 wind 6/96

and airborne lead. Each standard was developed to protect sensitive population groups, such as young children, the elderly, and people suffering from illnesses. An area where a NAAQS is exceeded more than three times in 3 years can be considered a "nonattainment area," which is subject to planning and pollution control requirements that are more stringent than normal requirements.

The State of California's ambient air quality standards are goals set by the California Air Resources Board (CARB) to protect public health and welfare. Standards have been set for ozone, CO, NO_2, SO_2, sulfates, PM_{10}, airborne lead, hydrogen sulfide, and vinyl chloride. As with the national standards, the state standards are designed to protect the most sensitive members of the population, particularly children, the elderly, and people who suffer from lung or heart diseases.

Both the state and national air quality standards comprise two parts: (1) an allowable concentration of a pollutant, and (2) an averaging time over which the concentration is to be measured. The allowable concentrations are based on the results of studies of the effects of the pollutants on human health, crops and vegetation, and, in some cases, damage to paint and other materials. The averaging times are based on whether the damage caused by the pollutant is more likely to occur during exposures to a high concentration for a short time (e.g., 1 hour), or to a relatively lower average concentration over a longer period (e.g., 8 hours, 24 hours, or 1 month). For some pollutants, there is more than one air quality standard, reflecting both its short-term and long-term effects. Table 3.4-1 presents the state and national ambient air quality standards for selected pollutants.

3.4.3.1 Project Setting

The area in which the Project is situated is classified as a nonattainment area for ozone and PM_{10} and an attainment area for NO_2, CO, SO_2, and particulate sulfate under California standards. Under the national standards, the Project site is located in an area classified as an unclassified/attainment area for all pollutants (i.e., ozone, NO_2, CO, SO_2, and PM_{10}). Table 3.4-1 shows the maximum ambient levels measured in the 1989 to 1994 time period, the last 5 years of which complete data are available. The table also shows concentrations measured during onsite monitoring that occurred between April 1990, and March 1991 at the Project site.

Southeast Desert Air Basin. As shown in Table 3.4-1, state and national ozone standards were exceeded in the air basin for approximately one-third to one-half of the days in each year during the 1989 to 1994 time period. A review of data over an extended time period shows that maximum hourly concentrations in the SEDAB have declined only slightly since 1973, from about 0.28 parts per million (ppm) to about 0.23 ppm. The highest 1-hour average ozone level measured onsite was 0.12 ppm, which exceeds the state standard and equals the national standard. For NO_2, annual concentrations have been below national standards for several years in the SEDAB.

Table 3.4-1
Air Quality Levels Measured in the Southeast Desert Air Basin[1]

	1989	1990	1991	1992	1993	1994	California Standard	National Standard
Ozone								
Highest 1-Hour Average	0.23	0.27	0.24	0.23	0.21	0.20	0.09 ppm	0.12 ppm
Highest Onsite 1-Hour Average		0.12[2]					0.09 ppm	0.12 ppm
Number of Days Exceeding State Standard	176	149	149	167	165	167	0.09 ppm	0.12 ppm
Number of Days Exceeding National Standard	111	89	145	85	88	88	0.09 ppm	0.12 ppm
Nitrogen Dioxide								
Highest 1-Hour Average	0.12	0.19	0.25	0.24	0.36	0.23	0.25 ppm	--
Highest Onsite 1-Hour Average		0.04[2]					0.25 ppm	--
Annual Average	0.019	0.020	0.020	0.018	0.016	0.01	--	0.053 ppm
Onsite Annual Average		0.003[2]					--	0.053 ppm
Number of Days Exceeding State Standard	0	0	0	0	1	0	0.25 ppm	--
Carbon Monoxide								
Highest 1-Hour Average	13	11	10	9	8	31	20 ppm	35 ppm
Highest Onsite 1-Hour Average		8.9[2]					20 ppm	35 ppm
Highest 8-Hour Average	7.1	8.3	7.1	5.4	5.9	13.1	9.0 ppm	9 ppm
Highest Onsite 8-Hour Average		3.7[2]					9.0 ppm	9 ppm
Number of Days Exceeding State 1-Hour Standard	0	0	0	0	0	4	20 ppm	--
Number of Days Exceeding National 1-Hour Standard	0	0	0	0	0	0	--	35 ppm
Number of Days Exceeding State 8-Hour Standard	0	0	0	0	0	10	9.0 ppm	--
Number of Days Exceeding National 8-Hour Standard	0	0	0	0	0	9	--	9 ppm
Sulfur Dioxide								
Highest 1-Hour Average	0.08	0.08	0.03	0.03	0.03	0.07	0.25 ppm	--
Highest 24-Hour Average	0.03	0.05	.013	0.013	.010	0.021	0.04 ppm	0.14 ppm
Annual Average	.002	.004	.003	.001	.001	0.001	--	0.03 ppm
Number of Days Exceeding State 1-Hour Standard	0	0	0	0	0	0	0.25 ppm	--
Number of Days Exceeding State 24-Hour Standard	0	1	0	0	0	0	0.04 ppm	--
Number of Days Exceeding National 24-Hour Standard	0	0	0	0	0	0	--	0.14 ppm
Suspended Sulfate								
Highest 24-Hour Average	19.1	29.1	3.25	18.6	14.00	--	25 mg/m^3	--
Number of Days Exceeding State 24-Hour Standard	0	0	0	0	0	0	25 mg/m^3	--
Fine Particulate (PM_{10})								
Highest 24-Hour Average	712	520	780	242	175	258	50 mg/m^3	150 mg/m^3
Onsite Highest 24-Hour Average		210.4[2]					50 mg/m^3	150 mg/m^3
Annual Geometric Mean	66.4	64.9	59.8	43.7	47.2	45.3	30 mg/m^3	--
Onsite Annual Geometric Mean		21.7[2]					30 mg/m^3	--
Annual Arithmetic Mean	90.3	79.3	63.1	47.3	52.4	48.7	--	50 mg/m^3
Onsite Annual Arithmetic Mean		29.8[2]					--	50 mg/m^3
Number of Days Exceeding State 24-Hour Standard	63	64	58	43	47	65	50 mg/m^3	--
Number of Days Exceeding National 24-Hour Standard	9	7	7	2	3	4	--	150 mg/m^3

[1]California Air Quality Data, Annual Summary, California Air Resources Board.
[2]Measured at Project site between March 1990 and April 1991.

There was a steady decrease in maximum hourly average NO_2 levels until 1989, when an increase developed between 1990 and 1993. Onsite NO_2 monitoring shows levels well below the applicable state and national standards. For CO and SO_2, a review of data since 1978 shows that there were no exceedances of the state or national standards in the SEDAB until

1994. The 1994 exceedances were all recorded at a new monitoring station that began operating in Calexico in 1994.

In addition, since 1987, there have been no violations of the state particulate sulfate standard in the SEDAB. From 1989 to 1993, the state PM_{10} 24-hour average standard has been exceeded approximately 50 days per year, whereas the national standard has been exceeded fewer than 10 days per year. A review of data from 1984 shows no clear trend in PM_{10} levels in the SEDAB. The maximum 24-hour average PM_{10} level measured onsite exceeds both the state and national standards, whereas annual average levels are below state and national standards.

Table 3.4-2 summarizes the PM_{10} levels recorded in the SEDAB from 1984 to 1994. Also shown in Table 3.4-2 are the highest 24-hour and the annual average PM_{10} concentrations measured onsite during monitoring that occurred between April 1990 and March 1991 at the Project site. Because no monitoring data have been collected in JTNP, levels for JTNP are expected to be between the worst-case levels shown in Table 3.4-2 for the SEDAB and those measured at the Project site. (Existing conditions for JTNP are discussed below in Section 3.4.3.3).

Table 3.4-2
Fine Particulate (PM_{10}) Levels in Southeast Desert Air Basin
1984-1994
(micrograms per cubic meter [$\mu g/m^3$])

Year	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Highest 24-Hour Average	65	496	230	171	368	712	520	780	242	175	258
2nd-highest 24-Hour Average	60	358	191	163	192	676	462	534	175	166	182
Onsite Highest 24-Hour Average							210.4[1]				--
Annual Geometric Mean* (State Standard = 30 $\mu g/m^3$)	60	358	191	163	192	676	462	534	175	166	45.3
Onsite Annual Geometric Mean*							21.7[2]				--
Annual Arithmetic Mean* (Federal Standard = 50 $\mu g/m^3$)	39.5	70.9	64.1	75.8	66.2	90.3	79.3	63.1	47.3	52.4	48.7
Onsite Annual Arithmetic Mean*							29.8[2]				--
Number of Days Exceeding State Std (50 $\mu g/m^3$, 24-hr)	6	57	54	56	56	63	64	58	43	47	65
Federal Std (150 $\mu g/m^3$, 24-hr)	0	6	2	3	2	9	7	7	2	3	4

Source: California Air Quality Data, Annual Summary, California Air Resources Board
*No basinwide summary available. The annual mean for each year is based on the station with the highest annual mean in the basin.
[1]Highest 24-hour PM_{10} concentration measured at Eagle Mountain between March 1990 and April 1991.
[2]Annual average PM_{10} concentration measured at Eagle Mountain between March 1990 and April 1991.

Sulfur dioxide levels in the SEDAB are below the state and federal standard. The SEDAB is considered an attainment area for CO and SO_2 for the purpose of state and federal air quality planning.

South Coast Air Basin. The pollutants of primary concern in the South Coast Air Basin (SCAB) are ozone, NO_2 and PM_{10}. Maximum ozone concentrations in the SCAB usually are recorded during the summer months. Table 3.4-3 shows the California and federal air quality standards for ozone, and maximum levels recorded in the SCAB for the period 1984 through

1994. The data show that the state ozone air quality standard was exceeded over half the days in each year except 1994.

Table 3.4-3
Ozone Levels in the South Coast Air Basin
1984-1994
(parts per million [ppm])

Year	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Highest 1-Hour Average	0.34	0.39	0.35	0.33	0.35	0.34	0.33	0.32	0.30	0.28	0.30
Number of Days Exceeding State Standard (0.09 ppm, 1-hour)	209	218	217	196	216	211	185	183	191	185	165
Number of Days Exceeding Federal Standard (0.12 ppm, 1-hour)	175	174	164	162	178	157	132	130	143	124	118

Source: California Air Quality Data, Annual Summary, California Air Resources Board.

Peak ozone levels have gradually declined in the SCAB over the last 15 years, despite significant population growth in the region. The frequency of violations, however, has decreased at a slower rate over the last several years after a substantial drop in the late 1970s and early 1980s. The basin is classified as an extreme nonattainment area for ozone for purposes of state and federal air quality planning.

Table 3.4-4 shows the state and federal air quality standards for NO_2, plus the maximum levels recorded in the SCAB in the period 1984 through 1994. The basin is a nonattainment area for NO_2 for purposes of state and federal air quality planning. Although the SCAB met the federal annual average NO_2 standard in the last few years, EPA has not formally changed the area's designation.

Table 3.4-4
Nitrogen Dioxide Levels in the South Coast Air Basin
1984-1994
(parts per million [ppm])

Year	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Highest 1-Hour Average	0.35	0.35	0.33	0.42	0.54	0.34	0.28	0.38	0.19	0.26	0.25
Annual Average	0.057	0.061	0.061	0.055	0.061	0.043	0.039	0.041	0.023	0.036	0.039
Number of Days Exceeding State Standard (0.25 ppm, 1-hour)	12	9	9	7	11	8	6	9	0	1	0
Exceedance of Federal Standard (0.053 Annual Average))	Y	Y	Y	Y	Y	N	N	N	N	N	N

Y = Yes
N = No
Source: California Air Quality Data, Annual Summary, California Air Resources Board.

Table 3.4-5 shows the California and federal air quality standards for PM_{10}, as well as the maximum levels recorded in the SCAB during the period 1984 through 1994. The peak 24-hour levels are 4 to 10 times the state standard. Because PM_{10} is measured only every

6 days at each monitoring location, however, the actual number of excesses may be roughly six times the reported values.

Table 3.4-5
PM_{10} Levels in the South Coast Air Basin
1984-1994
(micrograms per cubic meter [$\mu g/m^3$])

Year	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Highest 24-Hour Average	135	208	294	219	289	271	475	179	649	231	161
Annual Geometric Mean* (State Standard = 30 $\mu g/m^3$)	41.2	80.9	111.2	89.6	104.6	81.3	66.9	65.5	62.4	58.0	55.9
Annual Arithmetic Mean* (Federal Standard = 50 $\mu g/m^3$)	53.4	96.1	111.3	89.6	104.6	94.2	78.4	76.0	78.9	72.4	65.7
Number of Days Exceeding											
State Std (50 $\mu g/m^3$, 24-hr)	7	59	60	58	65	67	64	56	51	61	58
Federal Std (150 $\mu g/m^3$, 24-hr)	0	11	8	9	11	8	7	4	4	4	1

*No basinwide summary available. The annual means for each year is based on the station with the highest annual mean in the basin. The 1992 second highest 24-hour average was 222 $\mu g/m^3$. The highest 24-hour average, 649 $\mu g/m$, was recorded at the monitoring station at the Ontario Airport.

Source: California Air Quality Data, Annual Summary, California Air Resources Board.

Riverside, Los Angeles, Orange, and San Bernardino Counties in the South Coast Air Basin are designated as serious federal PM_{10} nonattainment areas. Because the federal EPA has classified these areas as serious, the SCAQMD is required to adopt the use of best available control measures (BACMs) on existing stationary sources. The BACM requirements must be implemented by February 8, 1997, 4 years from the date when EPA reclassified these areas from moderate to serious nonattainment. The SCAB is considered a serious nonattainment area for the purposes of the state PM_{10} standard.

3.4.3.3 Joshua Tree National Park

JTNP is an area designated by the federal government as a Class I area (e.g., national park or wilderness area), which is afforded protection through the federal Prevention of Significant Deterioration (PSD) Program. The program allows new sources to be constructed or existing sources to be modified while preserving the existing ambient air quality levels, protecting public health and welfare, and protecting Class I areas. As such, the program requires that air quality impacts of all sources in the area, plus background levels, cannot exceed the specified air quality increments.

Existing background levels, primarily ozone, are a primary concern for JTNP. Table 3.4-6 shows the California and federal air quality standards for ozone and the maximum levels recorded in JTNP in the period from 1985 to 1994. As shown in the table, the ambient data collected within JTNP show violations of the state and federal ozone standards.

Because of the absence of NO_2, CO, SO_2, and PM_{10} monitors in JTNP, no ambient data are available for these pollutants in JTNP. Because JTNP is located in the SEDAB, just to the north and west of the Project site, the levels of these pollutants in the JTNP are expected to be between the worst-case levels for the SEDAB and those measured at the Project site.

Table 3.4-6
Ozone Levels in the Joshua Tree National Park and Project Site
1985-1994
(parts per million [ppm])

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Highest 1-Hour Average										
JTNP-Lost Horse[1]	0.14	0.16	0.14	0.14	0.14	0.13	0.13	0.14	0.14	
JTNP-Black Rock[1]										0.17
Project Site[2]							0.12			
Number of Days Exceeding State Standard (0.9 ppm, 1-hour)										
JTNP—Lost Horse[1]	19	39	55	36	41	29	53	55	21	
JTNP—Black Rock[1]										77
Project Site[2]							17			
Number of Days Exceeding Federal Standard (0.12 ppm, 1-hour)										
JTNP—Lost Horse[1]	3	3	0	9	4	1	7	9	1	
JTNP—Black Rock[1]										20
Project Site[2]							0			

[1]Data source, EPA Aerometric Information Retrieval System (AIRS). For period from 1985 to 1993, data collected at Lost Horse monitoring site. For 1994, data collected at Black Rock monitoring site at western edge of Joshua Tree National Park.
[2]From data collected at Project site between March 1990 and April 1991.

3.4.4 Other Air Quality Issues

3.4.4.1 Regional Visibility

Visibility refers to the clarity of the atmosphere and is typically measured as the distance one can see at a particular location and time. The absorption and scattering of light by both gases and particles in the atmosphere restricts visibility. Natural phenomena that contribute to a decrease in visibility include fog, precipitation, blowing sand, and relative humidities greater than 70 percent. Engineered conditions that reduce visibility include the emission of combustion gases that transform in the atmosphere into very small particles termed "aerosols."

Visibility in the SEDAB is generally better in the eastern than the western part of the basin. Near the urbanized western edge of the air basin, midday visibilities average 15 miles; in the remote desert regions of the eastern basin, average visibilities approach 70 miles. As relative humidities in the air basin are usually below 70 percent, water vapor in the air does not significantly influence visibility levels. In the absence of large cities or industrial complexes, the greatest contribution to visibility degradation is made by the transport of aerosols from the South Coast and southern San Joaquin Valley Air Basins.

3.4.4.2 Acid Deposition

Acid deposition occurs as a result of acid rain, acid fog, acid cloud water, acid snow, and dry deposition of both gases and particles. Examples of dry deposition include nitric acid vapors, organic acid vapors, and sulfuric acid mist. Acid deposition is a result of the emissions of sulfur and nitrogen oxides. These emissions may come from sources such as industrial power plants, motor vehicles, or chemical manufacturing plants. Damage from acid deposition has been widely investigated in the eastern United States. In that region, problems include the acidification of lakes and streams and the harmful effects on vegetation, especially forests and grassland, from acid rain incidents.

California's acid deposition problems are different from and less severe than those in the eastern United States. Chronically acidified lakes or streams have not been found in California. There are, however, California lake watersheds in the high elevations of the Sierra Nevada that have low acid-neutralizing capacity and suffer from episodic, rather than chronic, acidification. In addition, because of its limited annual precipitation compared to the eastern states, California experiences less acid rain. Acid fog is more common in California and is typically 100 times more acidic than acid rain. In California, acid fog occurs in urban coastal areas and in the southern San Joaquin Valley. Dry deposition of gases and particles contribute to acid deposition in southern California. Urban coastal sites experience the most acidic deposition, both wet and dry, with nitric acid being the predominant acid of both forms. Data for acid deposition are not available for the vicinity of the Project, including JTNP. The reported levels for wet and/or dry deposited nitrogen (N) and sulfur (S) from the California Acid Deposition Monitoring Program are 3.0 to 21.7 kilogram per hectare per year (kg/ha/yr) and 0.4 to 3.2 kg/ha/yr for N and S, respectively.

3.4.4.3 Toxic Air Pollutants

A substance is considered toxic if it has the potential to cause or contribute to an increase in mortality or an increase in serious illness, or if it could pose a present or potential hazard to human health. Toxic air contaminants have been identified in California since 1984 through the process delineated in Assembly Bill (AB) 1807. In 1987, AB 2588, the Toxic "Hot Spots" Information and Assessment Act, was enacted by the California Legislature. This legislation requires industry to provide information to the public about emissions of toxic air contaminants and their effect on public health. In 1993, the California Legislature passed AB 2728, which identifies the 189 federal hazardous air pollutants listed in the federal Clean Air Act Amendments of 1990 as toxic air contaminants in California.

Under the AB 2588 Air Toxics "Hot Spots" program, certain facilities report their emissions of toxic air contaminants on a periodic basis. The Hot Spots program phased in the dates for the submittal of the initial inventories and risk assessments for larger facilities. In addition, efforts are currently underway to characterize the emissions and health risks associated with small business sources, such as gas stations and dry cleaners.

A large reduction in air toxic emissions has occurred in California through the State's Toxic Air Contaminant Control Program (AB 1807). The regulations implemented under this program include the control of emissions from dry cleaners, cooling towers, chrome plating operations, and ethylene oxide sterilizers. In upcoming years, another source of air toxic emission control will be implemented under Section 112, Hazardous Air Pollutants, of the 1990 Clean Air Act Amendments.

California's Proposition 65, the "Safe Drinking Water and Toxic Enforcement Act," does not directly control toxic air emissions, but it does require that warnings be provided to the affected public if they are exposed to significant concentrations of substances listed by the Governor as causing cancer or reproductive toxicity. Nearly 370 substances and classes of chemicals have been listed as cancer-causing or as reproductive toxicants as of January 1, 1990. Proposition 65 also prohibits discharges of the listed chemicals to drinking water sources. An air emission may be prohibited if it "more likely than not" will be introduced into a drinking water source.

3.4.4.4 Interbasin Transport

The transport of air pollutants from one air basin to another occurs when there are winds of sufficient speed, duration, and direction. Both ozone and ozone precursors, including hydrocarbons and nitrogen oxides, could be transported. In addition, particulant matter precursors, including organic, sulfate and nitrate aerosols, could be transported.

One of the difficulties in understanding air pollution transport in California is that there is significant variability in geography and meteorology throughout the state. These characteristics vary from the cool, rainy areas of the north coast to the arid regions of the Mojave and Colorado Deserts in the southeastern portion of the state.

In several studies completed by the CARB (see Section 3.4.5) over the last 10 years, it has been shown that transport of air pollutants from an upwind area can contribute to measured violations of air quality standards in downwind areas under certain conditions. The CARB studies used surface air trajectory analyses to identify pollutant transport pathways.

These studies show that there is pollutant transport from the SCAB to the SEDAB. As shown in Figure 3.4-3, the three major pollutant transport corridors between the two air basins are Soledad Canyon, Cajon Pass, and San Gorgonio Pass. In addition to transport from the SCAB, CARB studies also indicate that pollutant transport occurs from the San Joaquin Valley Air Basin to the SEDAB. In the summertime, air frequently enters the San Joaquin Valley from the San Francisco Bay area and flows in a southeasterly direction down the valley toward the Tehachapi Mountains. Some of this air and the pollution carried with it moves through the Tehachapi Pass into the Mojave Desert.

Furthermore, CARB studies suggest that pollutant transport also occurs from Mexico into the SEDAB. There have been pollutant exceedances reported at El Centro, less than 20 miles

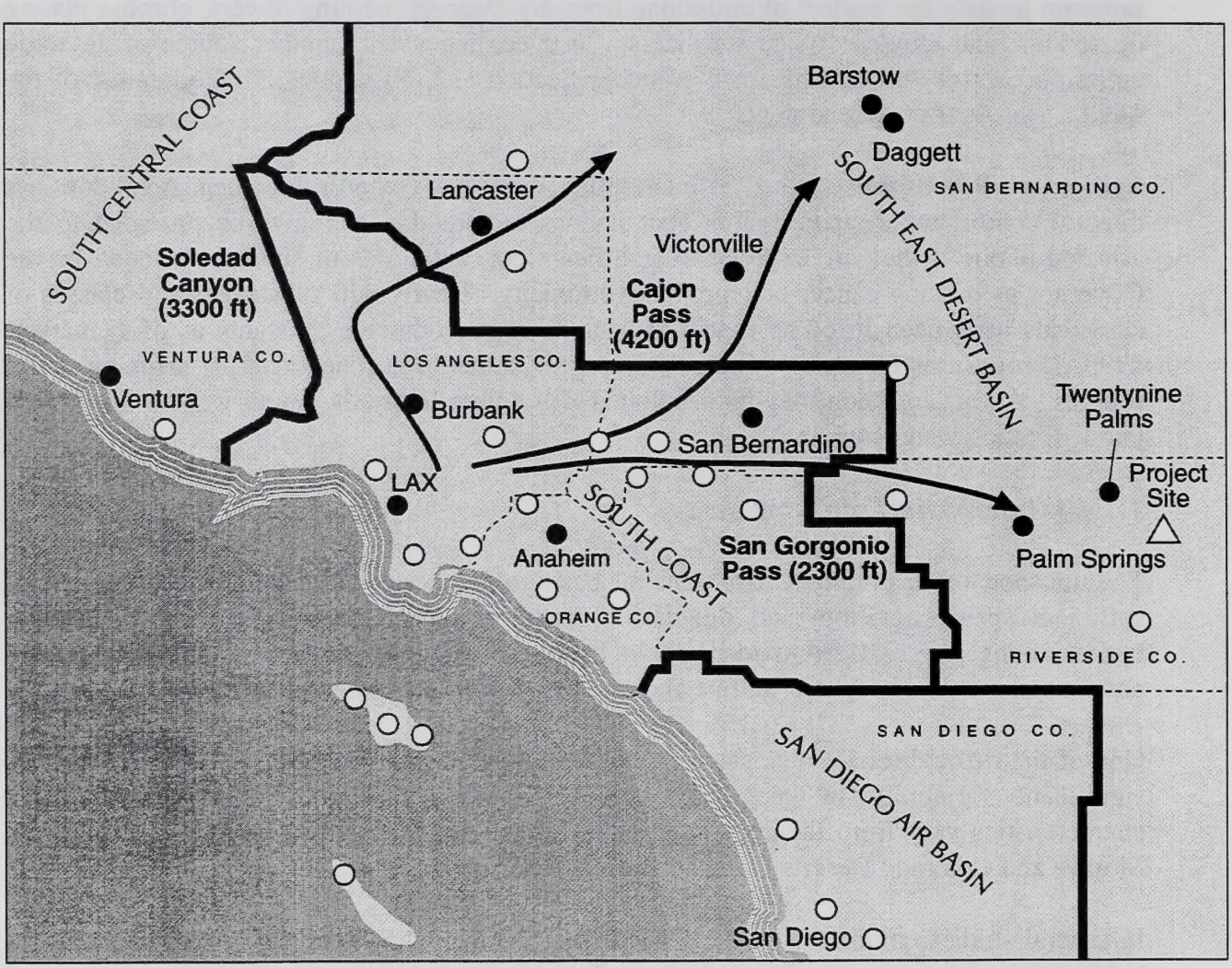


Figure 3.4-3
Interbasin Transport Between South Coast and Southeast Desert Air Basins
Eagle Mountain Landfill and Recycling Center EIS/EIR

Source: California Air Resources Board, October 1989

north of the Mexican border. The Mexicali area just over the border is growing rapidly, and prevailing summertime air flow is across the border from south to north.

3.4.4.5 Global Warming

"Global warming" is the term used to describe the projected increase in worldwide average temperatures as a result of an increase in the "greenhouse effect," which is attributable to the increased concentration of carbon dioxide (CO_2) and several trace gases in the atmosphere. Like the glass in a greenhouse, these gases are transparent to visible light, but absorb energy transmitted to the infrared spectrum. Light from the sun is thus transmitted through to the earth's surface, but infrared radiation from the earth's surface is absorbed near the atmosphere, rather than radiating back to space.

Although scientific opinion is not unanimous, several studies suggest that the increasing concentration of infrared absorbing gases in the atmosphere is likely to lead to a measurable increase in average global surface temperature by the middle of the next century. The impacts of this increase on California could include a decrease in water supplies, increased electric demand for cooling, a rise in ocean level which would threaten wetlands and shorelines, increased air pollution, and adverse impacts on California's economy.

Significant greenhouse gases in addition to CO_2 include methane, ozone, nitrous oxide, and various chlorofluorocarbon (CFC) species. Nitrogen oxides (NO_z) and non-methane hydrocarbons (NMHC) are also important because of their effects on atmospheric chemistry.

These species react in the atmosphere to form ozone, and compete for hydroxide (OH) radicals, which are responsible for degrading methane. Although nitrous oxide and the CFC species are present in the atmosphere in much smaller concentrations than CO_2, ozone, and methane, their infrared absorption per molecule is thousands of times greater, so that they have a major impact overall.

A complete inventory of greenhouse gas emissions in California is not yet available. One estimate cited by the California Energy Commission suggests, however, that California emits 5 percent of total global CFC emissions. Major emissions of CFCs result from their use as cleaning solvents in the computer and aerospace industries, and as blowing agents in the production of foam insulation and packaging material. CFCs are also used extensively as working fluids in refrigeration and air-conditioning systems, but this does not result in their emission, except in the case of leakage, or when the systems are scrapped or recharged without salvaging the refrigerant.

3.4.4.6 Odor

The potential for odor sources is associated with emissions from municipal solid waste residue containers during train transport, emissions from containers held in hot desert areas due to train delays, emissions from the landfill face, and emissions from the container washdown facility at the Project site.

3.4.5 Regulatory Setting

The proposed Project will be subject to local, state, and federal air quality programs and regulations. The following paragraphs discuss the existing regulations and programs that may be applicable to the proposed Project.

The EPA has responsibility for enforcing, on a national basis, the requirements of many of the country's environmental and hazardous waste laws. California is under the jurisdiction of EPA Region IX, located in San Francisco. EPA Region IX focuses principally on reviewing California's submittal for the State Implementation Plan (SIP) and is also involved in the enforcement of federal regulatory programs such as the Prevention of Significant Deterioration and New Source Performance Standards regulations.

The California Air Resources Board was created in 1968 by the Mulford-Carrell Air Resources Act, through the merger of two other state agencies. The CARB's primary responsibilities are to develop, adopt, implement, and enforce the state's motor vehicle pollution control program; to administer and coordinate the state's air pollution research program; to adopt and update, as necessary, the state's ambient air quality standards; to review the operations of the local air pollution control districts; and to review and coordinate preparation of the SIP for achieving the national ambient air quality standards (Health & Safety Code § 39500 et seq.).

When the state's air pollution statutes were reorganized in the mid-1960s, local air pollution control districts were required to be established in each county of the state (Health & Safety Code §§ 40000 et seq.). As part of this reorganization, the South Coast Air Quality Management District (SCAQMD) was established to develop plans for meeting the state and national ambient air quality standards; to develop control measures for nonvehicular sources of air pollution necessary to achieve and maintain both state and national air quality standards; to implement permit programs established for the construction, modification, and operation of sources of air pollution; and to enforce air pollution statutes and regulations governing nonvehicular sources. The SCAQMD is responsible for developing, implementing, and enforcing air quality regulations for portions of San Bernardino County, and all of Los Angeles, Orange, and, Riverside Counties, including the Project site.

3.4.5.1 Federal Air Quality Regulations

Prevention of Significant Deterioration. This regulation is applicable to areas that have achieved the national air quality standards, such as the area in which the Project is located. The PSD program allows new sources to be constructed or existing sources to be modified, while preserving the existing ambient air quality levels, protecting public health and welfare, and protecting Class I areas (e.g., national parks and wilderness areas). The PSD requirements apply on a pollutant-specific basis to any project that is a new, major stationary source or a major modification to an existing stationary source. (These terms are defined in 40 CFR 52.21.)

Standards of Performance for New Stationary Sources (NSPS). These are source-specific federal regulations that limit the allowable emissions of criteria pollutants (i.e., those that have a NAAQS and their precursors, 40 CFR 60). These regulations apply to certain sources, depending on the equipment size, process rate, and/or the date of construction, modification, or reconstruction of the affected facility. Recordkeeping, reporting, and monitoring requirements are usually necessary for the regulated pollutant from each subject source; the reports must be regularly submitted to the reviewing agency.

National Emissions Standards for Hazardous Air Pollutants (NESHAPS). These are either source-specific or pollutant-specific regulations, limiting the allowable emissions of hazardous air pollutants from the affected sources (40 CFR 61). Unlike criteria air pollutants, hazardous air pollutants are those that do not have a national ambient air quality standard but have been identified by EPA as causing or contributing to the adverse health effects of air pollution.

Title V (Operating Permits Program). This title of the 1990 federal Clean Air Act establishes a comprehensive operating permit program for major stationary sources (42 USC §§ 7661 et seq.). Under the Title V program, a single permit that includes a listing of all the stationary sources, applicable regulations, and requirements is required.

Title III (Hazardous Air Pollutants). This title of the 1990 federal Clean Air Act establishes a program for regulating hazardous air pollutants from area source and industrial categories rather than concentrating on individual pollutants. EPA established a list of major source categories, such as chemical plants, oil refineries, and steel plants for the purpose of setting standards. Approximately 250 source categories will be regulated. The regulations will apply technology-based standards rather than risk-based standards.

3.4.5.2 California Clean Air Act

The California Clean Air Act was enacted by the California Legislature and became law in January 1989. The Act requires the local air pollution control districts to attain and maintain the federal and state ambient air quality standards at the "earliest practicable date." The Act contains several milestones for the local districts and the CARB. As required by the Act, air quality plans must demonstrate attainment of the state ambient air quality standards and, specifically, must result in a 5 percent annual reduction in emissions of nonattainment pollutants (ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and their precursors) in a given district (Health and Safety Code § 40914). A local district may adopt additional stationary source control measures or transportation control measures, revise existing source-specific or new source review rules, or expand its vehicle inspection and maintenance program (Health and Safety Code § 40918). District air quality plans specify the development and adoption of more stringent regulations to achieve the requirements of the Act.

3.4.5.3 SCAQMD Air Quality Regulations

As discussed above, the proposed project will be subject to the rules, regulations, and air quality planning of the SCAQMD. The following paragraphs discuss SCAQMD regulations and programs that may be applicable to the proposed project.

SCAQMD Regulation XIII New Source Review (NSR). This regulation requires a pre-construction review for all new or modified sources of air pollution. NSR contains all of the following three principal elements:

- Best Available Control Technology (BACT)
- Emissions offsets
- Air quality impact analysis

BACT is required for all new emissions sources or modifications of existing sources if the project results in a net emissions increase of any nonattainment air contaminant, any halogenated hydrocarbons, or ammonia. To ensure that there is no net increase in regional emissions, the SCAQMD NSR regulation requires that net emissions increases that were subject to NSR be offset with emission reductions. The SCAQMD NSR regulation further requires an air quality impact analysis of NO_x, CO and PM_{10} emissions.

SCAQMD Rule 1401. This regulation is the NSR program for new and modified sources of toxic air contaminants. The rule requires that the new project or modification must not result in any of the following:

- A maximum individual cancer risk greater than one in one million at any receptor location, if a project is constructed without BACT for toxics

- A maximum individual cancer risk greater than ten in one million at any receptor location, if BACT for toxics is applied

- Greater than 0.5 excess cancer cases in the population subject to a risk of greater than one in one million

Prohibitory/Source Specific Rules. The SCAQMD has developed regulations limiting emissions from specific sources. These regulations are collectively known as "prohibitory/source specific rules" because they prohibit the construction or operation of a source of pollution that would violate specific emissions limits.

The general prohibitory/source specific regulations of SCAQMD that may be applicable to the proposed Project are summarized below.

- Rule 53 (County of Riverside Specific Air Contaminants)
- Rule 201 (Permit to Construct)
- Rule 203 (Permit to Operate)

- Rule 401 (Visible Emissions)
- Rule 402 (Nuisance)
- Rule 403 (Fugitive Dust)
- Rule 404 (Particulate Matter Concentration)
- Rule 405 (Solid Particulate Matter Weight)
- Rule 407 (Liquid and Gaseous Air Contaminants)
- Rule 409 (Combustion Contaminants)
- Rule 431.1 (Sulfur Content of Gaseous Fuels)
- Rule 461 (Gasoline Transfer and Dispensing)
- Rule 474 (Fuel Burning Equipment Oxides of Nitrogen)
- Rule 481 (Spray Coating Operations)
- Rule 1107 (Coating of Metal Parts and Products)
- Rule 1150 (Excavation of Landfill Sites)
- Rule 1150.1 (Control of Gaseous Emissions from Active Landfills)
- Rule 1171 (Solvent Cleaning Maintenance Activities)

Regulation IX (New Source Performance Standards). SCAQMD has adopted, by reference, the EPA NSPS for Non-Metallic Mineral Processing Plants (40 CFR 60, Chapter I, Subpart OOO). This regulation limits the discharge of particulate emissions. Subpart WWW (40 CFR 60), NSPS for Municipal Solid Waste Landfills, is an EPA regulation that requires subject landfills to install gas collection systems and then treat and/or combust the captured gases.

Regulation X (National Emission Standards for Hazardous Air Pollutants). The SCAQMD has adopted, by reference, the federal NESHAPS for benzene, beryllium, mercury, vinyl chloride, asbestos and arsenic.

Regulation XVII (Prevention of Significant Deterioration). The SCAQMD has applied for delegation of authority to implement the federal PSD program. This authority has not yet been granted by EPA.

Regulation XX (Regional Clean Air Incentives Market (RECLAIM). The SCAQMD has developed this program to allow participating facilities to operate under a plant-wide emissions allocation that is decreased each year. Under the program, participating facilities are allowed to trade unused emissions allocations.

Regulation XXX (Title V Permits). This regulation will implement the operating permit requirements of Title V of the federal Clean Air Act.

South Coast Air Quality Management Plan. A SIP is required by the 1990 federal Clean Air Act to demonstrate how all areas of California will meet the national ambient air quality standards within specified deadlines (42 USC§§ 7409, 7411). In California, each local air quality agency is responsible for developing an Air Quality Management Plan (AQMP) which is incorporated into the SIP. In 1994, the SCAQMD adopted a revised AQMP to

identify specific emission reduction measures to comply with the 1990 federal Clean Air Act (CAA) and the 1988 California Clean Air Act. The federal CAA requires the SCAQMD to develop a Federal Attainment Plan for ozone; a post-1996 Rate-of-Progress Plan; ozone attainment demonstrations for the Los Angeles County portion of the SEDAB (Antelope Valley) and the Riverside nonattainment area of the SEDAB (Coachella-San Jacinto Planning Area); and a PM_{10} SIP which incorporates best available control measures for fugitive sources.

The California CAA requires the SCAQMD to address the following in its AQMP: (1) application of Best Available Retrofit Control Technology; (2) reduction of nonattainment pollutants and their precursors at a rate of 5 percent per year, or, if this cannot be done, inclusion of all feasible measures and an expeditious implementation schedule; (3) measures to achieve an average vehicle ridership during peak commute hours of 1.5 person per vehicle by 1999; (4) ensure no net increase in mobile source emissions after 1997; (5) measures to reduce population exposure to severe nonattainment pollutants (i.e., ozone, carbon monoxide, and nitrogen oxide) according to a prescribed schedule; and (6) a ranking of control measures by cost-effectiveness and implementation priority.

The 1994 AQMP proposes two tiers of emission reduction measures. Tier 1 is based on short- and intermediate-term measures using the application of available technology and practices between 1994 and 2005. These measures are designed to satisfy the federal Clean Air Act requirements of reasonable available control technology and the California CAA best available retrofit control technology.

To achieve ambient air quality standards, additional emissions reductions beyond the implementation of short- and intermediate-term measures will be necessary. Thus, the AQMP also includes Tier 2 measures. These long-term measures rely on the advancement of technologies and control methods that can reasonably be expected to occur between 1994 and 2010, including further development and refinement of low- and zero-emission control technologies in addition to technological breakthroughs.

3.5 Land Use

This section discusses the existing land uses of the Eagle Mountain Mine, the Townsite, and the adjacent area. The federal agencies responsible for administering land use of federal lands in the vicinity of the Eagle Mountain Mine and the Townsite are the Bureau Land Management (BLM) and the National Park Service (NPS). Their responsibilities are discussed in this section and in Section 3.11, Wilderness. (Other federal laws and regulations with which the BLM and NPS must comply, such as the Clean Air Act [see Sections 3.4 and 4.4], are discussed throughout this EIS/EIR.) The BLM and the County of Riverside (County) must comply with federal, state, and local policies and regulations that address solid waste disposal, management of wilderness areas, and other related land use issues. The County approvals required for the Project include the proposed Landfill Specific Plan No. 305 (containing six planning areas) and the Townsite Specific Plan No. 306 (containing twelve planning areas), as well as other proposed land use approvals for the landfill and the Townsite, which are discussed in detail in Section 2 of this EIS/EIR.

3.5.1 Existing Land Uses of the Project Site

3.5.1.1 General Setting

The Project site is located in eastern Riverside County approximately 60 miles east of Indio and 50 miles west of Blythe. The Project site is situated in the foothills of the Eagle Mountains at the site of Kaiser's Eagle Mountain open-pit, iron-ore mine, which operated on a full-time basis from 1948 to 1983. The mine site is bordered on the north, west, and southwest by the Eagle Mountains and on the east and southeast by the Chuckwalla Valley. The proposed Project site is within approximately 1.5 miles of Joshua Tree National Park (JTNP) and approximately 11 miles north of Desert Center. Access to the Project site is via road and railroad. These routes are discussed below in the context of the Eagle Mountain Mine and the Townsite (also see Sections 3.3 and 4.3).

The Eagle Mountain Townsite is located on the alluvial fan on the southern part of the Project site. Elevations range from approximately 1,000 feet on the southeast to approximately 2,800 feet on the northwest. The topography of the Project site is generally disturbed by mining operations and urban development associated with the Townsite. Natural undisturbed mountainous areas exist on the northern and western border of the mine and Townsite. To the south of the Townsite is part of the Chuckwalla Valley floor extending toward Desert Center. Portions of this area are disturbed by unimproved trails, the railroad, and utility lines, as shown in Figures 1-2 and 3.5-3.

3.5.1.2 Eagle Mountain Mine (Proposed Landfill Footprint)

Portions of the Eagle Mountain Mine are proposed for use as a landfill. The Specific Plan for the landfill includes approximately 4,654 acres of land in and around Eagle Mountain Mine. Of this total acreage, the landfill footprint (i.e., the area where waste would be disposed of) would occupy approximately 2,164 acres, and open space and ancillary facilities would

occupy approximately 2,490 acres. The landfill footprint consists of substantially disturbed land from the former active operation of the Eagle Mountain Mine, including the East Pit open-pit mine. The proposed landfill footprint also contains intermittent canyon areas that are largely undisturbed. Although active iron ore mining has ceased, Kaiser maintains a management office at Eagle Mountain and continues to engage in limited mining-related activities, such as the sale of aggregate, iron ore, and riprap. The existing land uses at the portion of the Eagle Mountain Mine proposed for use as the landfill are shown in Figure 3.5-1.

North of the mine are mountainous areas in which little or no mining activity has occurred. These mountainous areas, which are higher in elevation than the lands disturbed from mining operations, provided a buffer for surrounding land uses during full-time mining operations. The elevation of the lowest point in the East Pit is approximately 705 feet above mean sea level. It is located on the eastern edge of Kaiser's mining activity on the Project site. The mining operation extends to the north and west with site disturbance extending to elevations in excess of 2,200 feet.

An area primarily dedicated to equipment maintenance and ore processing during the past period of active mining is located south of the mine and north of the Townsite. This area is shown in Figure 3.5-1. Kaiser has been dismantling and removing the processing equipment and structures from this area since 1983. Although most of the mining equipment has been removed from the property, some mining equipment and some building and transport facility foundations remain onsite. The types of mining equipment and facilities previously at the mine include:

- Tire shop
- Rail lines
- Maintenance facility
- Lube shop
- Equipment washing facilities
- Warehouse building
- Electrical substations
- Ore loading facilities
- Storage areas (for consumables and parts)
- Office buildings
- Parking areas
- Crude ore blending areas
- Concentrate storage areas
- Crushing plants
- Concentrating plants
- Water reservoirs
- Other ancillary facilities

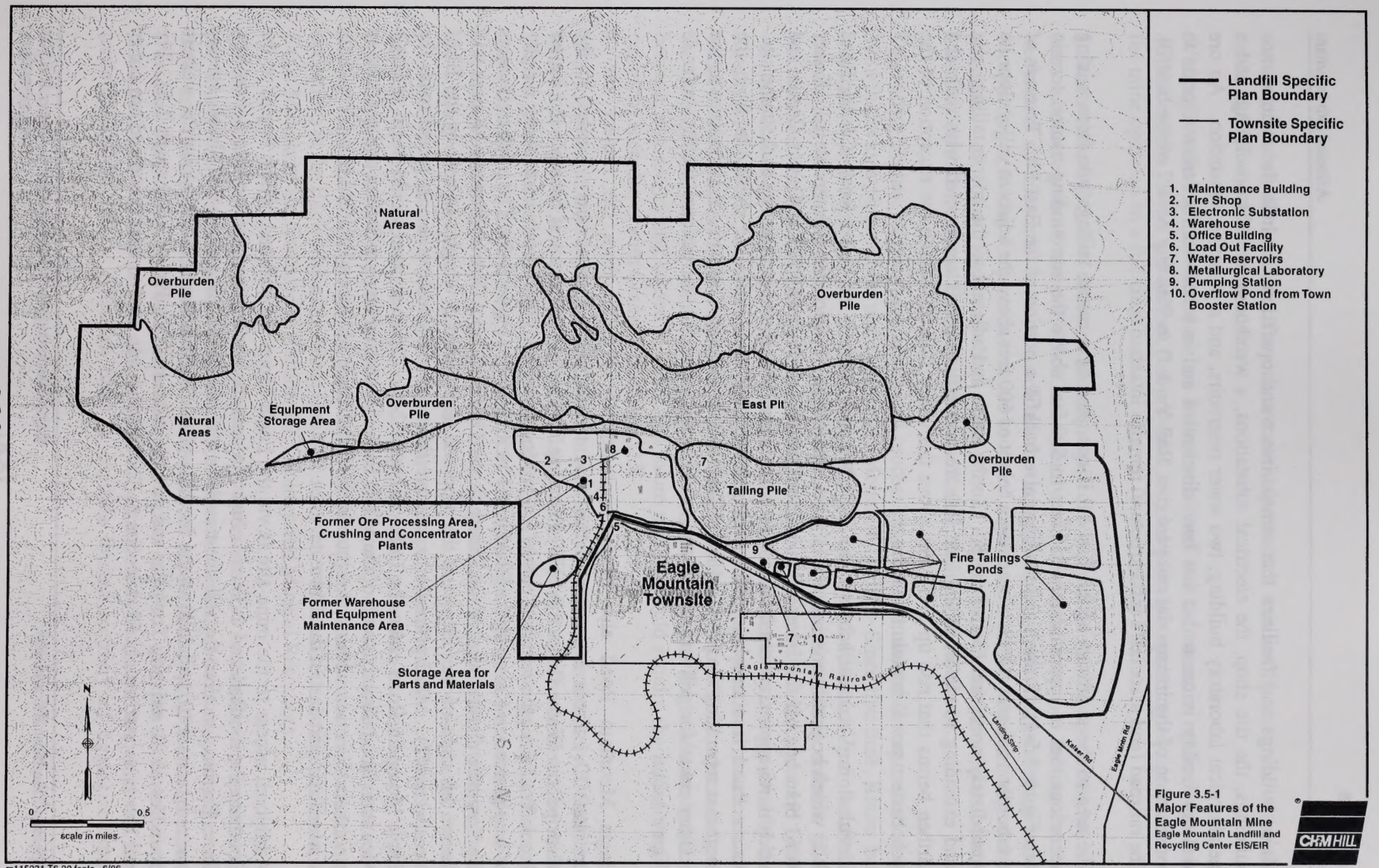


Figure 3.5-1
Major Features of the Eagle Mountain Mine
Eagle Mountain Landfill and Recycling Center EIS/EIR

m115231.T6.20 feats 6/96

Major buildings and facilities that remain intact and operational include the maintenance buildings, the tire shop, the electrical substations, a warehouse, an office building, and a metallurgical laboratory building, two water reservoirs, and a pumping substation. An ore load-out facility is onsite but has been dismantled and is scheduled for removal prior to construction of the intermodal rail yard (i.e., Rail Yard I) in Planning Area 2 of the landfill. The railroad (and associated infrastructure) remains intact.

The area to the southeast of the East Pit is occupied by a coarse tailings pile from mining operations that is approximately 350 feet to 500 feet above the surrounding natural terrain (see Figure 3.5-1). Some coarse tailings also backfill a portion of the East Pit. Terraces of overburden rock and alluvium reaching a height of 600 feet above the adjacent valley floor lie immediately north and east of the pit. To the south and adjacent to the coarse tailings pile (and extending southeast of the East Pit) are dry settling ponds constructed with rock and earthen berms that rise up to 90 feet above the valley floor that (with the exception of the most eastern pond) contain fine tailings.

Circulation. Vehicular access to the Eagle Mountain Mine is via Kaiser Road (County Road R-2) which begins approximately 11 miles south of the Project site at Interstate 10. Kaiser Road branches off the intersection of Interstate 10 and Highway 177 at Desert Center and heads north approximately 6 miles before turning northwest and terminating at the mine site. Kaiser Road is a two-lane, undivided roadway that approaches the mine site from the southeast separating the proposed landfill site and the existing Townsite. It also serves as the primary route for delivery trucks and vehicles that serve the correctional facility (refer to Figure 1-2).

Eagle Mountain Road also begins approximately 11 miles from the Project site at Interstate 10. From Interstate 10, this road travels north approximately 7 miles to the Metropolitan Water District (MWD) Pumping Station. At this point, it becomes the Kaiser Truck Trail (i.e., the unpaved part of Eagle Mountain Road) that travels north along a right-of-way granted to Kaiser by the BLM in the 1950s (refer to Figure 2-5). The truck trail enters the Townsite directly west of the Desert Center Unified School District property. Kaiser will vacate this right-of-way as part of the proposed issuance of new rights-of-way by the BLM (see Section 2). MRC proposes to improve this road and construct a new paved road, the Eagle Mountain Road extension (refer to Figure 2-5). This new road would begin at Eagle Mountain Road directly south of the MWD Eagle Mountain Pumping Station and continue in a northern direction within the right-of-way of the Eagle Mountain Railroad to a point along Kaiser Road just east of the Townsite.

Additional access to the mine site is via the Eagle Mountain Railroad, which begins at the Southern Pacific Railroad at Ferrum Junction near the northeastern shore of the Salton Sea. From Ferrum Junction, the rail line travels in a northeast direction along Salt Creek, crosses under Interstate 10, and follows the foothills of the Eagle Mountains and along the western boundary of the existing Townsite and into the mine site (see Figure 2-2 through 2-5). The rail line is approximately 52 miles long. The railroad was used to haul processed ore out of

the area to other destinations. The most recent shipments of iron ore by truck and rail were made in 1986 and 1993, respectively.

Within the existing mine site, there are a number of haul and maintenance roads, ranging in width between 20 feet and 45 feet, that provided internal access to operating equipment when the mine operated on a full-time basis.

Infrastructure. Much of the infrastructure required to support the mining operations has not been extensively used since 1986. Consequently, no substantial iron ore mining can be performed at this time because much of the equipment has been dismantled or sold. Prospecting activities for precious metals occurred in the mine, but no commercially viable quantities of these resources have been found (Personal Communication, Martin Magaña/Smith, Peroni, and Fox, to Jan Roberts/ Kaiser, September 1995).

Operating Status. Mineral extraction and processing activity at the mine was curtailed in 1983 in the area proposed for use as the Eagle Mountain landfill. Since that time, Kaiser has maintained and reported the property status to the County of Riverside and the State Department of Conservation as an active mine under reclamation in accordance with Reclamation Plan #107, which was approved by the County of Riverside on August 18, 1980. As such, Kaiser claims a vested right to renew surface mining operations, on approval by the County of Riverside, of an amended reclamation plan for mining operations in accordance with Public Resources Code Section 2776 and County Ordinance No. 555.17. According to the County of Riverside, vested mining rights no longer exist at the Eagle Mountain Mine because iron ore mining ceased in 1983, and future mining would require the issuance of a permit in accordance with County Ordinance 555.

Data for geologic iron deposits at Eagle Mountain Mine show that approximately 335 million tons of low-grade, iron-bearing material exist in nine separate reserve areas at the mine (Kaiser Steel Resources, 1990; SCE Engineering, 1990). Of these geologic reserves, approximately 170 million tons (1.05 percent of U.S. geologic reserves) were considered to be economically recoverable at the time the mine suspended active operation. (Ore deposits are considered economically feasible to mine if the ore has sufficient value to be mined, processed for grade and quality, and marketed at an acceptable profit margin.) These iron ore deposits, however, are not presently considered economically feasible to mine because of the high stripping ratios, low grade quality, increased transportation costs, small-market and low-market value for iron ore, and the need for facilities and infrastructure to support mining operations at the Eagle Mountain Mine. Geologic reserves, which exist in six discrete areas at Eagle Mountain, are discussed in Section 3.9, Geology and Mineral Resources.

Recent resource production uses at the mine have been limited to intermittent shipments of previously stockpiled, pelletized iron-ore concentrates and rock products (e.g., riprap, road base, and decorative and crushed rock) amounting to approximately 10,000 tons per year (Personal communication, Mike Peroni/Smith, Peroni, and Fox with Jan Roberts/Kaiser, November 1995). These products have been shipped mainly by truck; the last shipment was made by rail in 1993. Although there is ongoing limited recovery of aggregate from

stockpiles at the mine site, there are no plans for future mining. Any future mining on the site would require additional environmental review.

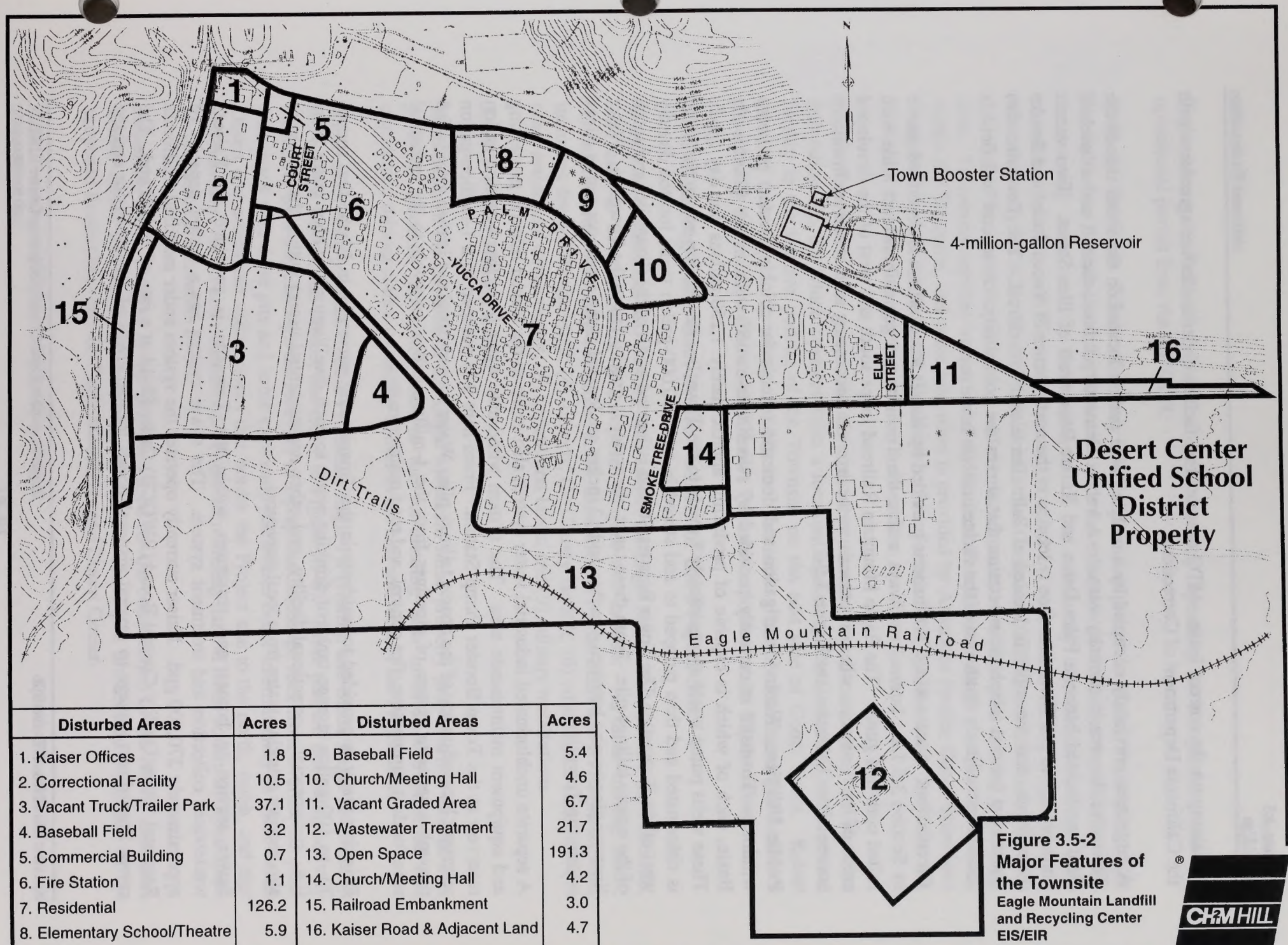
3.5.1.3 Townsite

The Townsite, which occupies approximately 429 acres, is located south of the mine site. The Townsite is an existing, but underused, former mining community that supplied housing for Kaiser employees, their families, and others during the period when the site was actively mined. Commercial uses within the Townsite also provided for community needs. At peak mining operations, approximately 3,700 people resided within the Townsite. The Townsite's 914 units consisted of single-family homes, mobile homes, apartments, and dormitories. Existing land uses of the Townsite are shown in Figure 3.5-2.

Residential Uses. The Townsite currently contains 410 housing sites comprising an existing housing stock of 347 detached single-family dwelling units, 14 partial residential structures and 49 residential foundations/slabs. Of the 410 housing sites, approximately 30 are occupied by employees of Kaiser, approximately 35 are reserved for Kaiser employees, and 81 are leased to MTC for use by employees of the community correctional facility. The 146 units either used or reserved for Kaiser and MTC employees are occupied by approximately 220 persons.

The reduction in total available housing stock from the period in which the mine was in full operation is a result of three primary factors: (1) the removal of mobile homes from the Townsite; (2) the conversion of dormitories and apartments to inmate housing within the community correctional facility operated by MTC; and (3) the physical removal of numerous homes from the Townsite. Many of the existing structures are in a state of disrepair from disuse, but Kaiser is proceeding with a systematic assessment and preservation program for all homes within the Townsite. Kaiser has continued to maintain the majority of the Townsite's improvements by restoring the physical appearance and housing stock of the Townsite to serve the employees and families of Kaiser and the community correctional facility. Renovation and maintenance work is being conducted in compliance with current building codes, as required by the California Department of Housing and Community Development. Kaiser has a Permit to Operate Employee Housing or Labor Camp, which is issued by the Department of Housing and Community Development through the County of Riverside Department of Environmental Health. The County of Riverside Department of Environmental Health conducts annual inspections in connection with this permit.

Nonresidential Uses. An office building that houses Kaiser administrative offices is located at the northwest corner of the Townsite. A self-serve laundromat occupies a portion of the former service station at the southeast corner of Yucca and Court Streets. The community correctional facility, with a permitted capacity of 500 inmates, is located on the west side of Court Street, south of the Kaiser offices in the former commercial buildings, former dormitory, and former medical center. The community correctional facility is operated under County of Riverside Public Use Permit No. 585. Kaiser has a lease agreement with MTC that specifies a 5-year contract for operation of the facility. There are fewer than 2 years



Disturbed Areas	Acres	Disturbed Areas	Acres
1. Kaiser Offices	1.8	9. Baseball Field	5.4
2. Correctional Facility	10.5	10. Church/Meeting Hall	4.6
3. Vacant Truck/Trailer Park	37.1	11. Vacant Graded Area	6.7
4. Baseball Field	3.2	12. Wastewater Treatment	21.7
5. Commercial Building	0.7	13. Open Space	191.3
6. Fire Station	1.1	14. Church/Meeting Hall	4.2
7. Residential	126.2	15. Railroad Embankment	3.0
8. Elementary School/Theatre	5.9	16. Kaiser Road & Adjacent Land	4.7

Figure 3.5-2
Major Features of the Townsite
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 peroniF 6/96

remaining on the current lease. MTC operates this facility under a contract agreement with the California Department of Corrections.

A large area previously occupied by a mobile home park is located on the south side of the Townsite; the area is currently vacant. A vacant elementary school, theater, and a baseball field are located between Palm Drive and Kaiser Road west of Elm Street. Two vacant churches are in the Townsite. One is located at the north corner of Yucca Street and Smoke Tree Drive, and the other is located at Palm Drive and Elm Street. The Townsite also contains a general telephone substation that serves the community. A second ball field is located immediately southwest of the vacated mobile home park.

Circulation. Access to the Townsite is provided by Kaiser Road, which is described above in Section 3.5.1.2. Internal roadways within the Townsite are generally 30 feet wide with rolled curb and gutter. The Eagle Mountain Railroad loops south and west of the developed areas of the Townsite, where it extends to the iron-ore processing area at the northwestern corner of the Townsite (see Figure 3.5-2).

Public Utilities. Water for irrigation and domestic (except for drinking water) purposes within the Townsite is currently provided by two Kaiser-owned wells in the Chuckwalla Basin, each of which is capable of producing approximately 1,250 gallons per day (gpd). These wells pump water approximately 7 miles to the Town Booster Station where the water is chlorinated and then pumped to and stored in two 500,000-gallon tanks located directly west of the Townsite. The Town Booster Station is located north of the Townsite, and south of the coarse tailings pile. From these tanks, the water is gravity-fed to the Townsite. Water lines ranging in size between 4 inches and 12 inches are located along roadways and in alleys within the Townsite.

A separate unchlorinated industrial water system also exists in the former mineral processing and equipment maintenance area. The system withdraws water from the 4-million-gallon reservoir at the Town Booster Pump Station. From here it is pumped to a 1-million-gallon reservoir located on top of the coarse tailings pile. Water for industrial use is then gravity-fed through a separate system of pipelines from the 1-million-gallon reservoir to the industrial area for dust suppression, fire control, and road maintenance.

Drinking water is provided to residents in the Townsite by purveyors in Blythe that supply 75- to 100-gallon storage tanks of drinking water to each dwelling unit. Other water users (i.e., commercial, correctional facility, and other nonresidential users) within the Townsite also receive drinking water from local purveyors.

Sewer service to homes and structures within the Townsite is provided by Kaiser's wastewater collection and treatment system. The sewer system has a design capacity of approximately 270,000 gpd. Kaiser currently operates the system under modified California Regional Water Quality Control Board (RWQCB) Order 88-14 at a rate of 35,000 gpd. The sewer lines direct sewage to several disposal ponds located south of the Townsite and the

Eagle Mountain Railroad. The facility is currently operating in compliance with the operational permit from the RWQCB.

Southern California Edison Company (SCE) provides power to Kaiser's substation for distribution to the mine and the Townsite, with the exception of the correctional facility and the housing areas used by the employees of the community correctional facility. The correctional facility and Townsite homes occupied by correctional facility employees are served directly by SCE. Southern California Gas Company (SCGC) provides natural gas to the community correctional facility and the laundromat, as well as the mineral processing area. Telephone services are provided by General Telephone through a substation located within the Townsite, and cable television is provided by American Pacific Cable Television Company for uses within the Townsite. See Section 3.12, Utilities and Services, for additional information regarding utilities and services.

Public Services. Fire protection services are provided by County of Riverside Fire Substation No. 80, which operates from a location adjacent to the community correctional facility in the western portion of the Townsite on the east side of Court Street. Kaiser provides private security service within the Townsite. Law enforcement protection is provided by the County of Riverside Sheriff's Department located at the Blythe substation.

3.5.2 Existing Land Uses in the Vicinity of the Project Site

In addition to historical and existing land uses of the Eagle Mountain Mine and the Townsite, land uses in the vicinity of the proposed Project site include: (1) other mining lands; (2) federal lands, including wilderness areas, administered by the BLM and NPS; (3) utilities, including the MWD aqueduct; (4) airports; (5) County landfill; (6) educational facilities; (7) other residential development; (8) agricultural lands; and (9) military installations.

3.5.2.1 Other Mining Lands

In addition to the portions of the Eagle Mountain Mine property proposed for landfill use, potential resource production uses in the surrounding area involve both patented and unpatented mining claims owned by Kaiser to the east and west of the Project site.

Three other open pits (the Central Pit, Black Eagle Pit [North], and Black Eagle Pit [South]) are located west of the Project site (refer to Figure 3.9-8). These pits are not being actively mined for iron ore, although the recovery of riprap and landscape rock from overburden piles associated with these pits and some exploratory activities occur intermittently in these areas. Desert mountains and valley slopes that border the Project site to the north, south, and east are, however, vacant and undisturbed. These surrounding natural lands constitute open space and resource preservation areas.

Relatively small, inactive gravel pits were used for the construction of the MWD aqueduct, Kaiser Road, and the Eagle Mountain Railroad. These pits are located southeast of the proposed Project between the Eagle Mountains and Desert Center.

3.5.2.2 Bureau of Land Management and National Park Service Wilderness Areas

In the vicinity of the proposed Project, the BLM and the NPS administer federal lands, some of which are classified as wilderness areas. These areas are discussed in detail in Section 3.11, Wilderness. Within a 50-mile radius of the proposed Project, the BLM is responsible for managing the following wilderness areas: (1) portions of the Chuckwalla Mountains; (2) Palen/McCoy Wilderness; (3) parts of the Orocopia Mountains; and (4) the Mecca Hills Wilderness. These areas are discussed in detail in Section 3.11.5.1 and shown in Figures 3.11-2, 3.11-3, 3.11-4, and 3.11-5. In addition to the wilderness areas, the Chocolate Mountain Gunnery Range (administrated by the U.S. Navy, Title VIII CDPA) and the Desert Lily Sanctuary (administered by the BLM, Section 107, CDPA) are other federal lands within a 50-mile radius.

NPS administers wilderness areas in JTNP. (In 1994, the Joshua Tree National Monument was designated as a national park by the passage of the Desert Protection Act [see Section 3.11.6.5] and approximately 234,000 acres of adjacent lands under the BLM's management were transferred to the NPS to administer as part of JTNP.) Most of the approximately 794,000 acres in the park are designated as wilderness areas set aside for the preservation of natural, cultural, historic, and scenic resources. Land use management of JTNP is directed by a series of federal statutes and regulations, which are discussed in Sections 3.11 and 4.11. Chief among the implementing guidance is NPS's Natural Resources Management Guidelines—NPS 77 (NPS, 1991). This document is incorporated by reference into this EIS/EIR. The NPS 77 guidelines are applicable to all park units (i.e., monuments, preserves, parks). Therefore, the policies and regulatory standards for JTNP do not change as a result of its redesignation. JTNP is within 1.5 miles of the Project site.

3.5.2.3 Utilities

Transportation, utilities, and communications facilities crisscross the desert in the general vicinity of the proposed Project site. Utilities are discussed in Section 3.12 of this EIS/EIR.

The MWD owns structures and facilities in connection with operation and management of the Colorado River Aqueduct. The open portion of the aqueduct, which is approximately 1 mile from the northeast corner of the landfill footprint, runs parallel to and within several hundred feet of, the eastern edge of the Project site in an open channel. At the eastern edge of the Project site, the aqueduct flows underground into a concrete tunnel and then flows by gravity to the Eagle Mountain Pumping Station (see Figure 3.5-3). Adjacent to the pumping station, MWD maintains approximately 15 single-family homes and one dormitory to accommodate up to approximately 40 transient workers. Twenty-four current residents are employees of MWD (Personal Communication, Martin Magaña/Smith, Peroni, and Fox, with Richard Hughes, Eagle Mountain Plant Operator/MWD, November 1995). Portions of the MWD pipelines for the aqueduct are located within JTNP but outside of the designated wilderness areas. MWD owns two wells (both of which are inactive) in the Pinto Basin within the JTNP. Although the wells are currently leased to Kaiser for use at Eagle Mountain

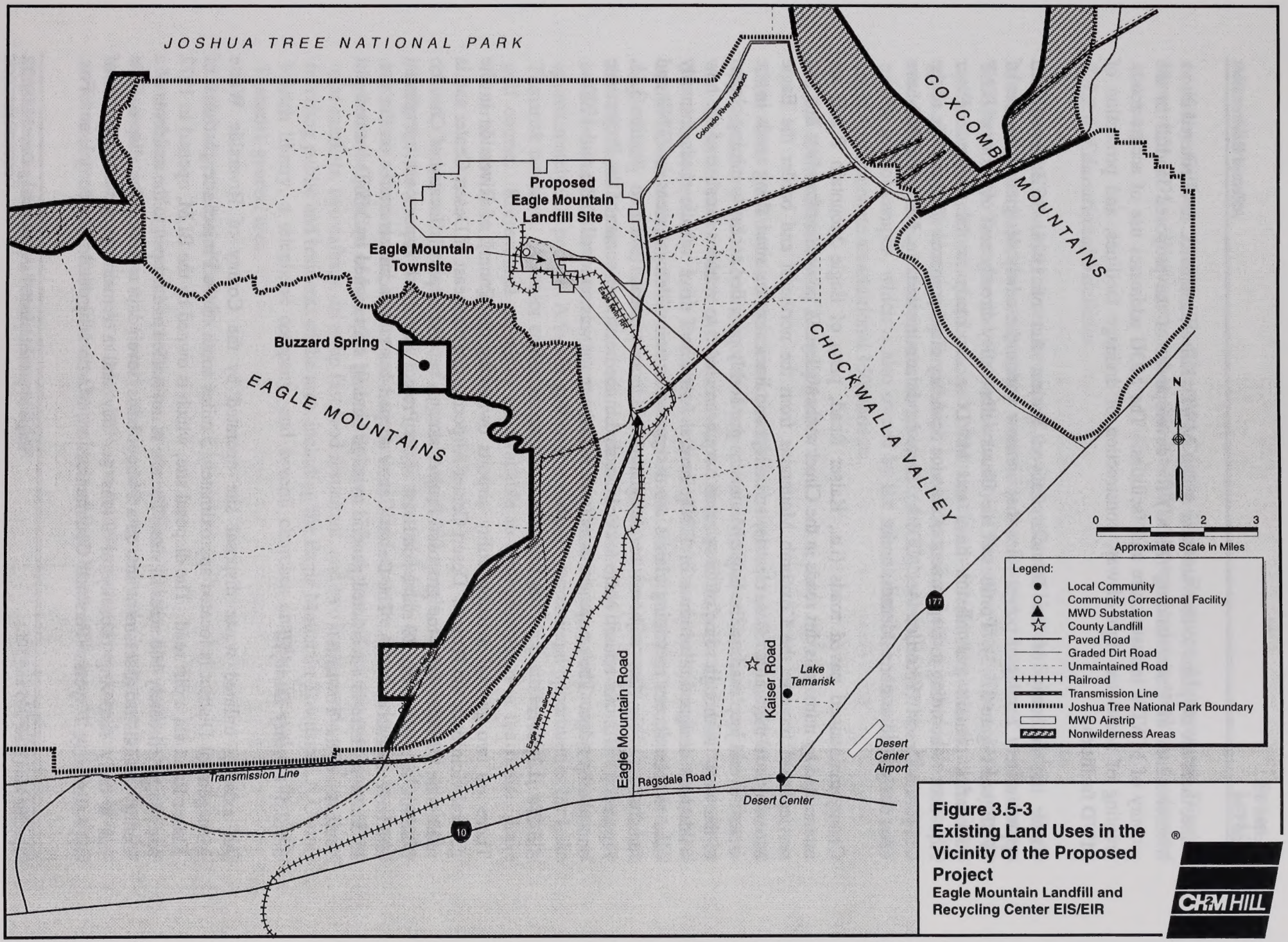


Figure 3.5-3
Existing Land Uses in the Vicinity of the Proposed Project
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

Layer Control: 1,2,3,4,5

m115231 T6 20 landuse 6/96

Mine, there are no plans to activate these wells. MWD, Kaiser, and MRC have entered into a Memorandum of Understanding (MOU) for development of the proposed landfill in the vicinity of MWD's infrastructure and facilities. The MOU addresses use of access roads, granting of additional right-of-way, construction of drainage facilities, and protection of MWD facilities.

Under the authority of the Boulder Canyon Project Act of 1928, SCE constructed approximately 2 miles of power lines that are now within the newly designated borders of JTNP (see Figure 3.5-3). Portions of the Chuckwalla Valley directly east of the new JTNP boundaries contain transmission lines and MWD access roads to the Colorado River Aqueduct. According to Department of Interior boundary maps prepared after passage of the California Desert Protection Act (CDPA), these lands administered by NPS in JTNP have been designated as nonwilderness areas.

County-maintained paved roads (i.e., Kaiser Road, parts of Eagle Mountain Road) are intersected by numerous dirt roads in the Chuckwalla Valley. A power transmission line and service road traverse the Coxcomb Mountains from the northeast and border the Eagle Mountains to the south. Gas, electric, and telephone lines also are sited along roads in the area. Several jeep roads in the Eagle Mountains previously provided access to mining claims to the west. Although some of these roads have been closed to vehicles because of the new wilderness designation of areas of JTNP, several four-wheel drive vehicle roads formerly used to gain access to mining claims are designated as nonwilderness areas in JTNP and remain open for use adjacent to designated wilderness areas (refer to Section 3.11, Figure 3.11-10). An unused radio tower is located in the northwest corner of the Project site on a nearby ridge. The equipment associated with the tower was removed in the mid-1970s.

3.5.2.4 Airports

There are two general aviation utility airports owned by the County of Riverside in the general vicinity of the Project. Desert Center Airport is just northeast of Desert Center and is more than 10 miles from the proposed Project site. A second airport is located at Chiriaco Summit, approximately 19 miles southeast of the Project site. Both airports are operational and have asphalt runways. The Desert Center Airport has two vacant structures on the site. In addition, there is a restricted general aviation landing strip owned by MWD located just southeast of the Townsite.

3.5.2.5 County Landfill

An existing unlined waste disposal site operated by the County of Riverside Waste Management District is located approximately 5 miles south of the Project site, just west of Kaiser Road via a dirt road. The disposal site, which is owned by the BLM, opened in 1972 and is approximately 160 acres in size. The site is not staffed and is open to the residents of a County-established assessment area on a 24-hour basis, seven days a week. This disposal site has a daily receiving capacity of 9 tons per day and a remaining operational life of approximately 17 years (Personal Communication, Martin Magaña/Smith, Peroni, and Fox,

to Kathy Gifford, Planner III, Riverside County Waste Resource Management District, November 1995). Waste received at this landfill is covered twice a week or as deemed necessary.

3.5.2.6 Educational Facilities

The Townsite is within the service area of the Desert Center Unified School District. Eagle Mountain School, located on property owned by the District, is adjacent to the eastern boundary of the Townsite and southern boundary of the mine site. The school currently operates as an elementary school, and conducts classes for Kindergarten through eighth grade. The school occupies the former high school campus and can accommodate up to 500 students. High school students are transported to the high school in Blythe. The adjacent middle school campus, which is also owned by the school district, is currently inactive but could accommodate an additional 150 students.

3.5.2.7 Other Residential Developments

Other than the Townsite, the nearest residential uses are scattered single-family homes approximately 4 miles southeast of the Project site along Kaiser Road, and in Lake Tamarisk and Desert Center, which are located approximately 8 and 11 miles southeast of the Townsite, respectively. Lake Tamarisk was developed by Kaiser to alleviate housing demand at the Townsite during full-time mining operations. This community was planned for 350 single-family detached homesites and 150 mobile home sites. Currently, 146 finished lots and 150 mobile home sites have been developed. Of the 146 finished lots, 68 homes are constructed and 78 lots remain unimproved. Lake Tamarisk has a permanent population of approximately 200 people. A 9-hole golf course provides recreational opportunities for Lake Tamarisk residents. A senior center, recreation center, and pro shop are associated with the golf course. Recreational amenities are available to nonresidents on a fee basis. Lake Tamarisk also has a County fire station.

Desert Center, with a population of approximately 280 people, is characterized by single-family residences and two small trailer parks, most of which are associated with nearby businesses. Commercial services and institutional land uses are found primarily in Desert Center at the junction of Interstate 10 and Highway 177. A post office, one gas station, three mini-markets, two cafes, a drive-up fast food restaurant, and two bars provide services to the traveling public and residents of the area, including the Eagle Mountain Townsite. A County branch library, a telephone company, and several churches are also located in the Lake Tamarisk general area.

3.5.2.8 Agricultural Lands

An estimate of agricultural production in the project vicinity was made based on the information submitted to the County of Riverside Agricultural Commissioner's Office for pesticide spraying permits. As of May 1996, the following crop types were being cultivated in the area generally north of Desert Center, west of Rice Road: 458 acres of jojoba (a shrub

from which an oil is extracted and used in a number of commercial products including cosmetics, hair preparations, lubricants, polishes, etc.), 190 acres of asparagus, 20 acres of grapefruit, 10 acres of table grapes, and 10 acres of dates for a total of approximately 688 acres of cropland in the project area (Personal communication, David Merriman/Smith, Peroni, and Fox, with Bill Oesterlein, Deputy Agricultural Commissioner/County of Riverside, June 3, 1996). In addition, there are two fish farms in the vicinity located east of Rice Road, north of Desert Center. These crops are irrigated by groundwater. Agricultural lands, in general, are classified by the California Department of Conservation as Prime, Important, or Unique. None of the cultivated acreage in the vicinity of the Project site is classified by the State Department of Conservation as Prime, Important, or Unique, nor is it reflected as such in the County General Plan. (County of Riverside, Comprehensive Plan, 1988).

3.5.2.9 Recreational Uses

Recreational land uses in the vicinity of the Project site include desert touring, shooting, hiking, and wildlife viewing, on federal lands administered by the BLM and NPS in the Eagle Mountains and Chuckwalla Valley. The nearest designated camping site (with 14 campsites) is more than 15 miles southwest of the Project site in Corn Springs and is managed by the BLM. To the north, in the eastern portion of the Pinto Basin in JTNP, recreational use is restricted to backpacking because of the prohibition of motorized vehicles in wilderness areas. Vehicular access to the Pinto Basin area of JTNP that is directly north of the Project site is prohibited. Recreational use is limited by the amount of water an individual can carry because there are no visitor-use facilities in JTNP within approximately 20 miles of the Project site. With the exception of the Cottonwood campground and trail in the southern portion of JTNP (approximately 20 miles from the proposed Project), the majority of designated visitor facilities are located in the western portions of JTNP, approximately 40 to 50 miles from the proposed Project site (refer to Figure 3.10-3).

Recreational use is restricted or prohibited on much of the private mining and utility holdings in the area, and there are no nearby areas for off-road vehicle use. Recreation could occur in the new areas of JTNP west, southwest, and east of the Project site. The recreational vehicle park at Lake Tamarisk also provides private recreational opportunities. (See Sections 3.10.4 and 3.11 for additional discussion of recreational uses.)

3.5.2.10 Marine Corps Air Ground Combat Center–Twentynine Palms

The Marine Corps Air Ground Combat Center at Twentynine Palms is located between Interstate 40 and State Highway 62 directly north of the northern boundary of JTNP. It was established during World War II and now has a population of over 9,000 Marine and 700 Navy personnel, 8,600 family members, and 1,400 civilian employees. The purpose of the Combat Center is to develop and evaluate the Marine Corps' arms training program and to conduct live-fire combat exercises. It is also the site of the Expeditionary Air Field that conducts thousands of yearly aircraft operations associated with training exercises (Public

Affairs Office of the Marine Corps Air Ground Combat Center, Fact Sheet updated June 26, 1995).

3.5.3 Land Use Plans and Policies

Federal and local agencies (i.e., County of Riverside) are responsible for managing land uses within and adjacent to the Project site. These agencies prepare and regulate land use plans that classify lands under their control and define the types of land uses appropriate for each classification; the County implements policies that control the types of development that are allowed on the proposed Project site, and the BLM and NPS implement similar authorities for surrounding federally owned areas, including JTNP. Each of the agencies with land-use responsibilities and the context in which they manage federal lands are discussed below. The responsibilities of the BLM and NPS associated with managing wilderness areas are discussed in detail in Section 3.11, Wilderness.

3.5.3.1 Federal Lands (Bureau of Land Management and National Park Service)

The federal lands administered by the BLM and NPS in the vicinity of the proposed Project are within the California Desert Conservation Area (CDCA), which is depicted in Figure 3.11-1 in Section 3.11. The management authorities of the BLM and NPS apply only to federal lands; the management jurisdiction of these agencies does not apply to the Kaiser-owned portions of the proposed Project site. Neither the BLM nor NPS administers the use of lands outside of their jurisdiction (i.e., private lands outside of parks or wilderness areas are not subject to federal land policies or the implementation of buffer zones). These lands are introduced here because they are in the vicinity of the proposed Project Site. The plans and policies for these lands are discussed in more detail in Section 3.11, Wilderness. The text below describes the general planning context for federal lands in the CDCA, including land use classifications and special management areas.

Bureau of Land Management. Most of the desert land in the Mojave and Colorado deserts, including the federal lands in the vicinity of the Project site, is under federal jurisdiction and managed by the BLM. The CDCA Plan, approved by the U.S. Department of the Interior in 1980 (BLM, 1980), provides a comprehensive land use management plan for the 25-million-acre CDCA. Over 12 million acres in the CDCA are federal lands. The goal of the plan is to "provide for the economic, educational, scientific and recreational use of public lands and resources of the California Desert Conservation Area, in a manner which enhances, on balance, the environmental, cultural, and aesthetic values of the desert and its future productivity." (BLM, 1980).

The CDCA Plan was prepared pursuant to the Federal Land Policy and Management Act of 1976 (FLPMA-P.L. 94-579, 90 Stat. 2743, 43 USC 1701). Section 601 of FLPMA requires that the BLM develop a plan to "provide for the immediate and future protection and administration of public lands in the California Desert within the framework of a program of multiple use and sustained yield, and the maintenance of environmental quality." Section 103 of FLPMA defines the terms "multiple use" and "sustained yield":

> The term "multiple use" means the management of public lands and their various resource values so that they are utilized in combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in the use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource values that takes into account the long-term needs of future generations for the renewable and non-renewable resources including but not limited to recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values.
>
> The term "sustained yield" means the achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the public lands consistent with multiple use.

To effect the policies of the CDCA Plan (BLM 1980), the BLM uses three major land management approaches: (1) land use classification; (2) plan elements; and (3) areas of critical environmental concern. These are described below.

Land Use Classification. As defined in the CDCA Plan (BLM 1980), the BLM applies four multiple use classes for implementing the goal of "multiple use" and "sustained yield." These are: (1) Controlled Use; (2) Limited Use; (3) Moderate Use; and (4) Intensive Use. The guidelines applicable to each multiple use class are in Appendix B-1 of this EIS/EIR (specific waste disposal guidelines for these classes are discussed in No. 16, Waste Disposal, of the appendix table).

- Controlled Use (Class C) is designed to preserve and protect areas having wilderness characteristics as described in the Wilderness Act of 1964 (see Section 3.116.4). Specific objectives are to preserve the natural condition and wilderness character of representative desert environments, including examples of Great Basin, Sonoran, and Mojave Deserts in the California Desert; and to provide opportunities for the use and enjoyment of these areas, while preserving their wilderness characteristics.

- Limited Use (Class L) is designed to protect sensitive natural scenic, ecological, and cultural resources, yet provides for low intensity multiple use that can be carefully controlled. Specific objectives are to protect sensitive natural scenic, ecological, and cultural resources; and to provide for generally low intensity, multiple use of resources where that use can be carefully controlled to ensure that sensitive natural, scenic, ecological, and cultural resources are not diminished.

- Moderate Use (Class M) is designed to provide a wide variety of uses, yet mitigate damage to the most sensitive resources. Specific objectives are to provide for a wide variety of present and future uses, including mining, grazing, wildlife, watershed,

recreation, and utilities; and to conserve desert resources and mitigate damage to resources caused by permitted uses.

- Intensive Use (Class I) emphasizes development-oriented use of lands and resources to meet consumptive needs, yet provides appropriate mitigation and protection of sensitive, natural, and cultural values. Specific objectives are to provide for the use of land to meet human consumptive needs, with appropriate mitigation, protection of sensitive, natural, and cultural values, rehabilitation, and restoration.

Federal lands administered by the BLM within and adjacent to the proposed Project site are designated as Multiple Use Class M, and the areas of the Eagle Mountains directly north and west of the East Pit are classified as Class I. Federal lands in the area of the proposed railroad right-of-way and south of Interstate 10 are classified as Class L. The multiple use classes of BLM-administered lands adjacent to Kaiser-owned lands are shown in Figure 3.5-4. Class I guidelines are less stringent for water quality, vehicle access, and recreational vehicle use than the Class M guidelines cited in Appendix B of this EIS/EIR, but in other ways are identical with those of Class M. Operational guidelines for Class L are similar to Class M guidelines pertaining to air quality, water quality, cultural and paleontological resources, Native American, fire management, vegetation, mineral exploration and development, waste disposal, and wildlife species and habitat issues. In addition, Class L guidelines allow for the use of railroad and trams to serve authorized uses if no other viable alternative is possible. Railroads and trams may be allowed on Class M and I lands.

The current waste disposal guidelines (as specified in an amendment to the CDCA Plan and amended January 15, 1987; see Appendix B-1, number 16) prohibit BLM-managed lands from being used for waste disposal while those lands remain in federal ownership. These guidelines would not preclude the use of the proposed Project site for landfilling provided that the BLM transfers public ownership of lands on the Project site to private ownership and that the Project is implemented in a manner consistent with the air quality, water quality, cultural and paleontological, Native American, vegetation, wildlife, and fire suppression guidelines cited above.

Plan Elements. This planning feature is designed to deal with the potential for inconsistent, conflicting uses of resources within a land use class. Resolving these conflicts is essential to effective multiple use management. These elements are:

- Wildlife
- Cultural resources/Native American
- Mineral Exploration and Development
- Livestock Grazing
- Wild Horse and Burro
- Wilderness
- Motorized Vehicle

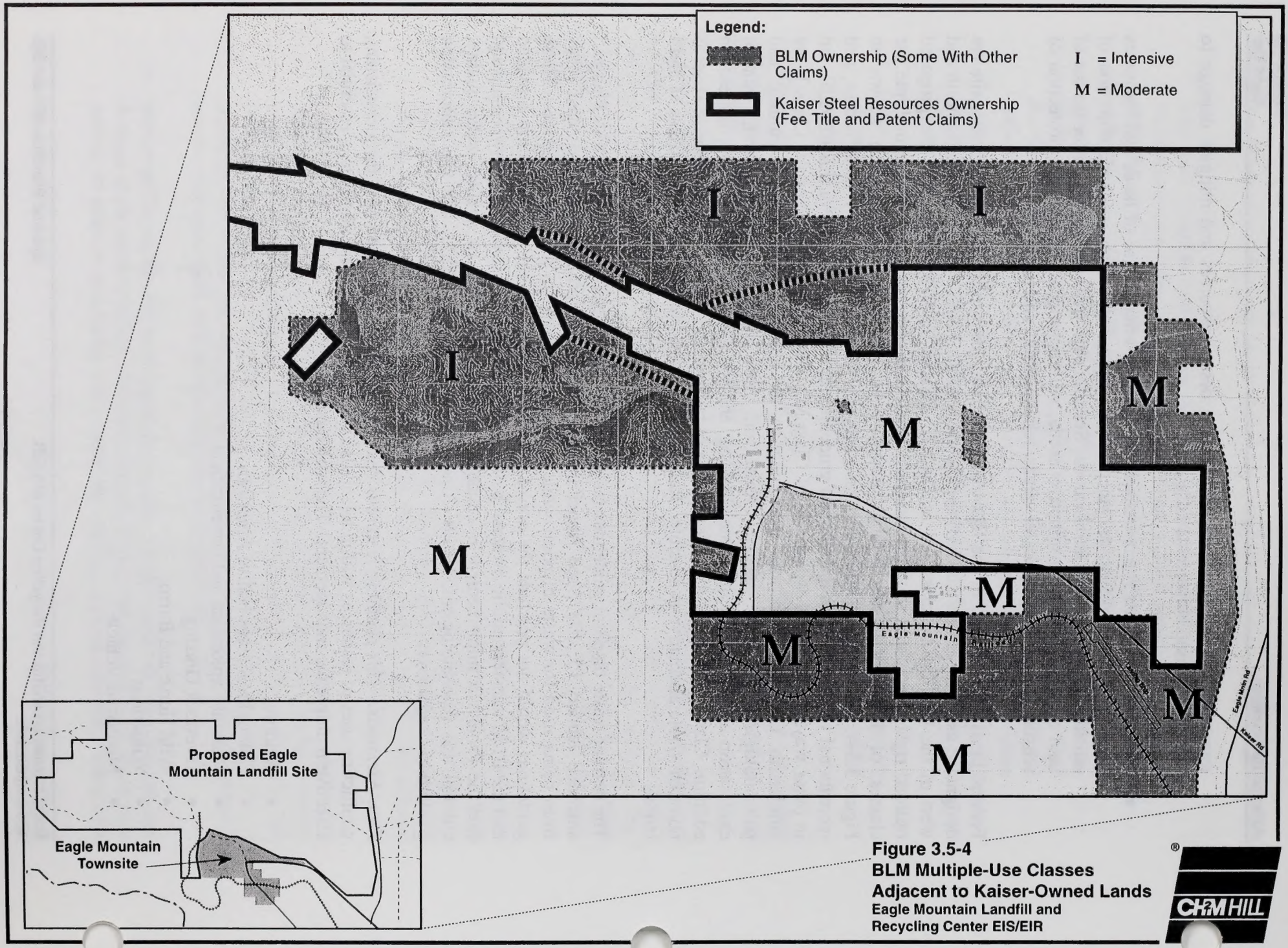


Figure 3.5-4
BLM Multiple-Use Classes Adjacent to Kaiser-Owned Lands
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2MHILL

m115231.T6.20 6/96

- Recreation
- Energy Production and Utility Corridors
- Land Tenure

Areas of Critical Environmental Concern. Within the CDCA, a management program addresses special areas known as Areas of Critical Environmental Concern (ACEC). This planning component allows managers to focus special attention in areas where a distinctly rare or valuable resource is identified. FLPMA, Section 103(a), defines an ACEC as an area "within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards." This special consideration category is needed when protective measures of the Multiple-use Classes and the Plan Elements are insufficient to protect the resource. It encourages special consideration for protection of a distinctly rare or valuable resource that can be given adequate protection through special management plans during implementation.

The CDCA Plan contains 75 ACECs. In the vicinity of the proposed Project, the BLM administers the following three ACECs: (1) Corn Springs ACEC (approximately 15 miles southeast of the Project site), (2) Chuckwalla Bench ACEC (approximately 12 miles south of the Project site); and (3) the Salt Creek ACEC (approximately 22 miles southwest of the Project site). Corn Springs ACEC was created to protect a significant stand of riparian vegetation that supports abundant wildlife and is important for migratory birds (BLM, Corn Springs ACEC Final Management Plan, June 1981). The Chuckwalla Bench ACEC was established in recognition of unique wildlife and vegetation values, including one of the highest density desert tortoise populations in California (BLM, Draft Chuckwalla Bench Management Plan, September 1984). Salt Creek was designated as a wildlife ACEC because of the presence of the desert pupfish in Salt Creek and its tributaries. Other sensitive species occurring within the Salt Creek ACEC include the Yuma Clapper Rail, California Black Rail and flat-tailed horned lizard (Salt Creek ACEC Management Plan, September 1982). Salt Creek ACEC is currently proposed to be increased in size from about 4,000 acres to approximately 15,000 acres. If approved it would be renamed Dos Palmas ACEC (Personal communication, David Merriman/Smith, Peroni, and Fox, with Elena Misquez/Bureau of Land Management, November 1995). The Eagle Mountain Railroad passes through approximately 5 miles of the Salt Creek ACEC and through approximately 8 miles of the Chuckwalla Bench ACEC. The ACECs in the vicinity of the proposed Project are shown in Figure 3.5-5.

National Park Service. The NPS also administers federal lands adjacent to the Project site. Specifically, JTNP is within approximately 1.5 miles of the proposed Project. The CDPA (see Section 3.11.6.5) changed the status of Joshua Tree National Monument to a national park and transferred management of approximately 234,000 acres of BLM-administered lands to NPS to be managed as a national park. The transferred lands increased the acreage of JTNP to 794,000 acres. (The portions of the transferred lands that are in proximity to the proposed Project are shown in Figures 3.11-7 and 3.11-8.) A brief overview of NPS's land

use zoning classifications for its pending draft backcountry management plan for JTNP is provided below. Because the majority of JTNP's acreage is designated as wilderness, the NPS wilderness zoning and general policies for managing the park are discussed in greater detail in Section 3.11, Wilderness.

The JTNP Backcountry Management Planning Team is using the following backcountry wilderness management zones in its backcountry planning process.

- Backcountry Transition Zone. This zone would provide a sense of being immersed in the natural landscape, and a range of visitor use experiences are available in this zone. Certain nonmotorized types of transportation are permitted. This zone would require a high level of management, and the tolerance for resource degradation from visitor use would be low.

- Wilderness Zone. This zone would provide a similar sense of immersion in the landscape but is further away from comforts and conveniences than the Backcountry Transition Zone. This zone would require a moderate level of management and the tolerance for resource degradation from visitor use would be low.

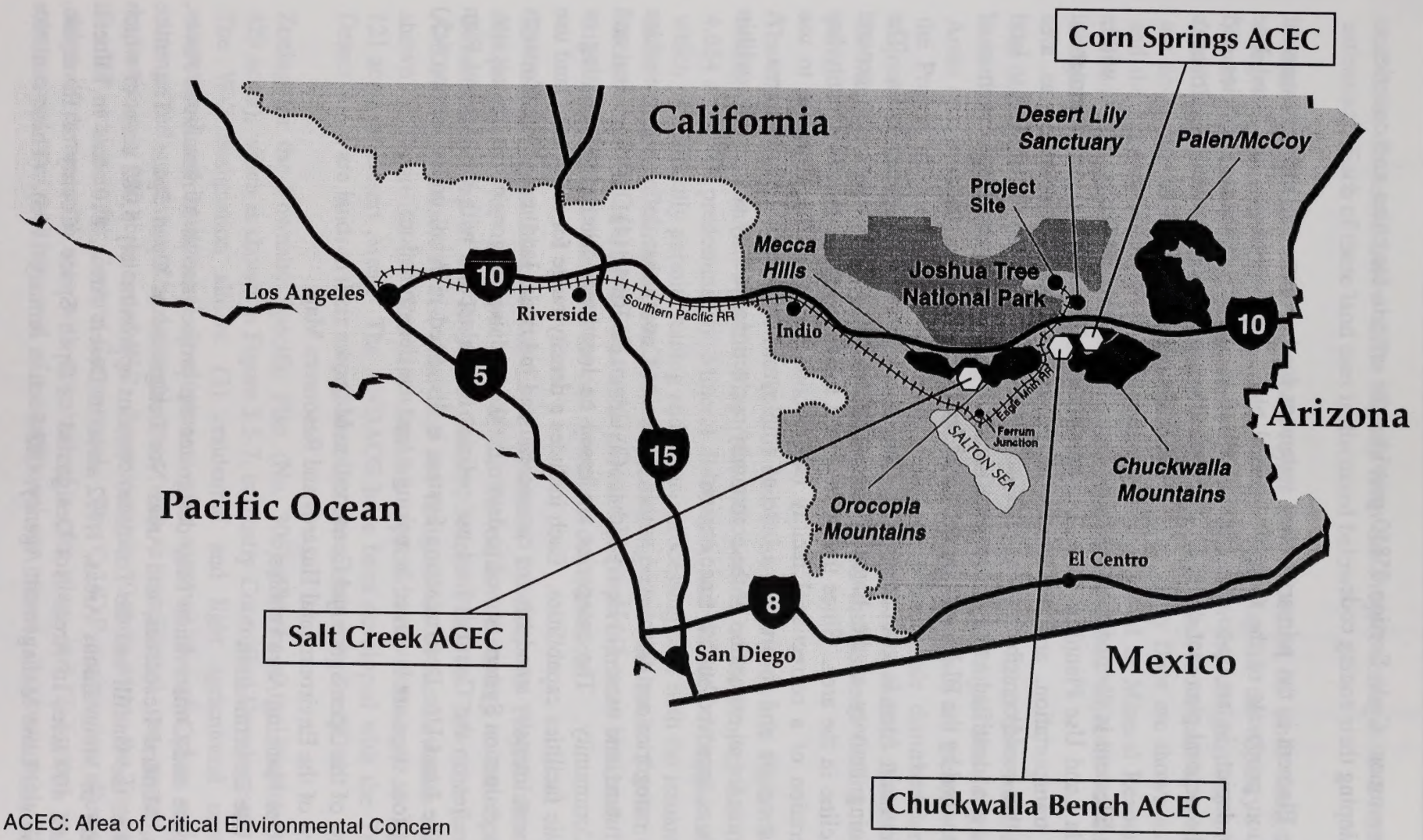
- Primitive Wilderness. This zone would provide an "untrammeled," "primeval" environment devoid of the works of people. No trails would be marked and no vehicles would be allowed. This zone would require a very limited level of management and the tolerance for resource degradation from visitor use would be very low.

- Sensitive Resources Protection Areas. This zone would contain sensitive cultural and/or natural resources, such as critical wildlife habitat, threatened and endangered plant habitat, archaeological sites, historic areas, and water sources. This zone could require a very high level of management within or outside the zone and the tolerance for resource degradation from visitor use would be very low.

3.5.3.2 County of Riverside

Since 1937, all cities and counties in California have been required by the State legislature to adopt general plans. The general plan is required to be a comprehensive, long-term guide for the physical development of the county or city and any land outside its boundaries that is relative to its planning. State law provides that the general plan must address seven "elements" or subject categories. These required elements are land use, circulation, housing, conservation, open space, noise, and safety (State of California, *General Plan Guidelines,* November 1990).

Zoning is the division of a city or county into districts and the application of various regulations within each district. Zoning regulations are generally those that regulate the height or bulk of buildings (i.e., structural and architectural design) and those that describe allowable uses within each district (Curtin, *California Land Use and Planning Law,* 1994).



ACEC: Area of Critical Environmental Concern

Source:
BLM, California Statewide Wilderness Study Report, 1991
Not to Scale

Figure 3.5-5
Bureau of Land Management Areas of Critical Environmental Concern in the Vicinity of the Proposed Project Site
Eagle Mountain Landfill and Recycling Center EIS/EIR

California Government Code Section 65850 provides the criteria for cities and counties to follow in developing their zoning code.

The Land Use Element is the primary policy statement for implementing the development and conservation proposals of the County's general plan. The purpose of the Land Use Element is to depict, in an up-to-date manner, all of the goals, objectives, policies and standards of the general plan that direct the anticipated growth for land within the County's jurisdiction.

The Land Use Element is divided into Land Use Planning Areas. The Project site is within the Chuckwalla Land Use Planning Area. Power plant development, highway commercial services, rail transportation, and availability of irrigation water are identified as area characteristics that could contribute to the land use potential of this area. Constraints to land use in the area are identified as its remote location, lack of infrastructure, large expanses of desert land managed by the BLM, and the decreased mining activity.

The Eagle Mountain Area is a subarea of the Chuckwalla Land Use Planning Area. The decreased mining activity at the Eagle Mountain Mine has contributed to the general population decline in the area. Since the mine ceased full-time operations, the County has approved operation of a correctional facility (see Section 3.5.13) at the Townsite to use existing infrastructure and to provide a base of employment and revenue in the area. A public use permit for an expansion of the community correctional facility at a new site within the Townsite was approved but has since expired.

Five land use categories are established within Riverside County that define the intensities and extent of future land uses: (1) Heavy Urban; (2) Urban; (3) Rural; (4) Outlying Area; and (5) Planned Community. The categories are based on locational criteria and existing or proposed public facilities capabilities. Each includes a density range for residential land use and development intensity standards for commercial and industrial land uses. The County's Land Use Determination System is used to determine the land use category of the Project site. This system relies on the County's land use policies in conjunction with the General Plan diagrams. (The Land Use Determination System is discussed in detail under Section 4.5.) The following four steps are involved in making a land use determination:

- Review of the Open Space and Conservation Map
- Review of the Environmental Hazards and Resources Map
- Land Use Planning Area Profiles
- Land Use Determination

The Open Space and Conservation Map designates the project site as Mountainous Areas, Desert Areas, Mineral Resources, and Areas Not Designated as Open Space. The entire Project site (i.e., the landfill and the Townsite) contains approximately 5,082 acres of which 2,072 acres are in Mountainous Areas, 1,792 acres in Desert Areas, 810 acres in Mineral Resources, and 409 acres in Areas Not Designated as Open Space (County of Riverside, Transportation and Land Management Agency, GIS Section January 1996). (These statistics

and those discussed below differ slightly from the Project acreages as a result of rounding estimates). Each of these land uses is discussed below.

Proposed Landfill. The proposed Project site is located on lands designated into four categories on the Open Space and Conservation Map in the County's General Plan, Figure V-2, Open Space and Conservation. The land use designations of the proposed landfill and Townsite are shown in Figure 3.5-6. In general, mountainous portions of the site are designated as Mountainous Areas, lands on the valley floor are shown as Desert Areas, and the existing inactive open pit ore mine is designated as Mineral Resources. A small portion of the landfill site, north of the Kaiser Road and adjacent to the Townsite is designated Areas Not Designated as Open Space (ANDAOS).

The majority of the Project site designated as Mountainous Areas have maintained a natural state (i.e., not disturbed by mining). Those portions of the Project site designated as Desert Areas consist mostly of disturbed lands where the settling ponds are located. Those parts of the Project site designated as Mineral Resources also include disturbed lands where the majority of past mining activities took place. The ANDAOS contain disturbed lands where the mine processing facilities and equipment/vehicle maintenance facility were located as part of the past mining operations.

The zoning in the vicinity of the landfill and Townsite is shown in Figure 3.5-7. Current zoning for the Landfill Specific Plan (No. 305) portion of the Project site (approximately 4,654 acres) is predominantly Mineral Resources and Related Manufacturing (M-R-A), which provisionally permits mining and related processing uses with the issuance of a permit under County Ordinance No. 555, implementing the California Surface Mining and Reclamation Act. In addition, this zone provides some performance standards for noise, road criteria, slopes, and other land use and operations considerations.

Townsite. In addition to the Eagle Mountain Landfill, the Project also includes the repopulation of the developed area of the Townsite. According to the Open Space and Conservation Map of the Riverside County General Plan, the Townsite is designated as ANDAOS and Desert Areas. The land use designations of the Townsite and vicinity are shown in Figure 3.5-6. The site contains approximately 308 acres of ANDAOS; and 121 acres of Desert Areas. The ANDAOS have been developed with the Townsite. The Desert Areas are lands in their natural state that are managed by the BLM.

Zoning for the Townsite Specific Plan (No. 306) portion of the Project (approximately 429 acres), which is shown in Figure 3.5-7, is mostly Controlled Development Areas (W-2). The W-2 designation allows: (1) residential and light agricultural uses; (2) certain recreational and institutional developments with approval of a plot plan; and (3) a limited mining and commercial/agricultural uses with a conditional use permit. There are approximately 380 acres zoned W-2. Approximately 10 acres within the Townsite are zoned C-1/CP, which is for General-Commercial. The C-1/C-P designation allows: (1) a wide range of commercial uses with approval of a plot plan; and (2) limited, more intensive, commercial uses with approval of a conditional use permit. Approximately 25 acres in the

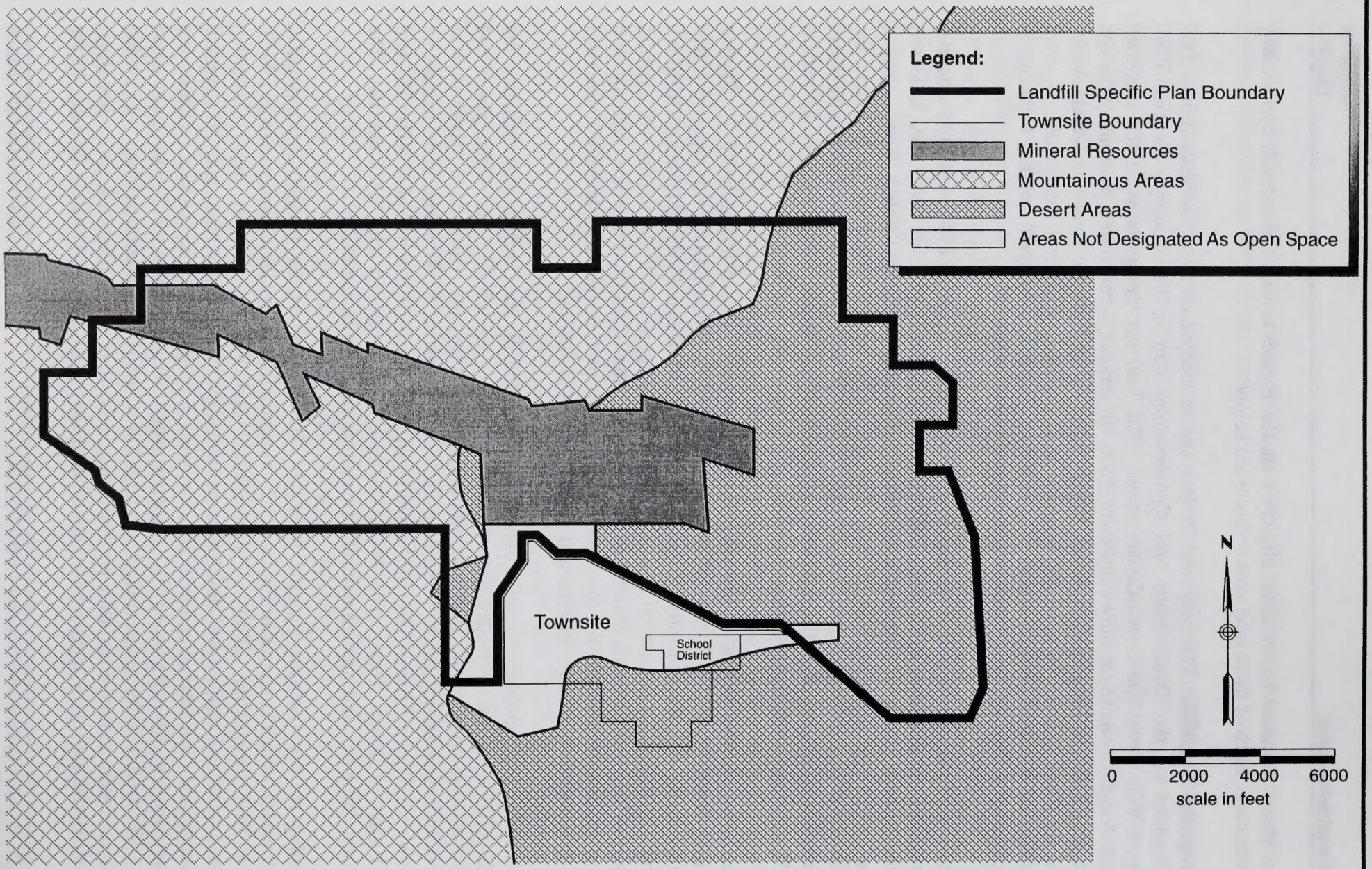


Figure 3.5-6
Existing Land Use Designation of Proposed Project Site
Eagle Mountain Landfill and Recycling Center EIS/EIR

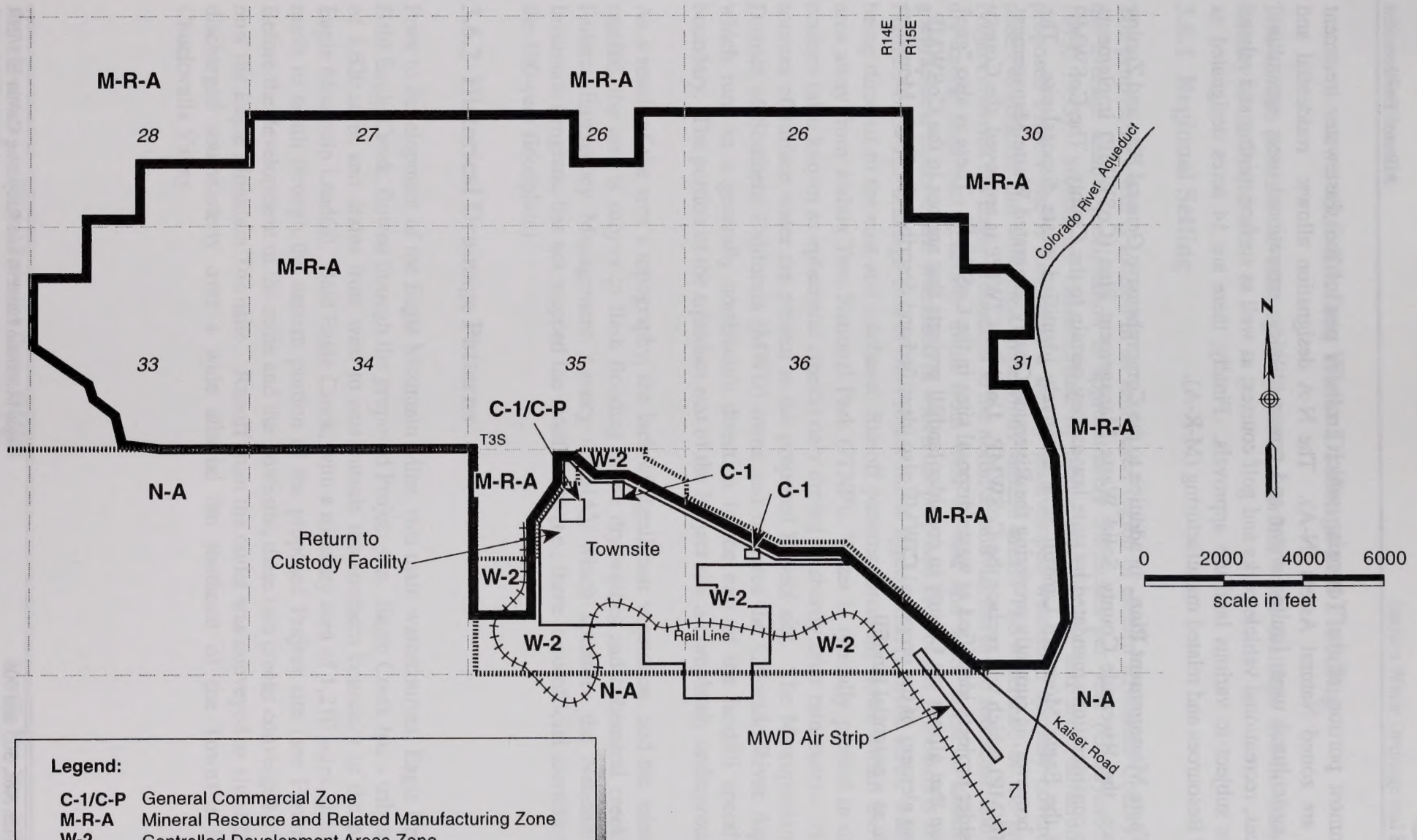


Figure 3.5-7
Zoning in the Vicinity of the Proposed Project Site
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2MHILL

southernmost portion of the Townsite, which includes part of the wastewater treatment facility, are zoned Natural Assets (N-A). The N-A designation allows: residential and limited agricultural uses; limited water and power utilities; recreational uses; agricultural residences; recreational vehicle parks and golf courses; as well as surface mining and related activities subject to various land use approvals. Finally, there are 14 acres designated as Mineral Resources and related manufacturing (M-R-A).

Solid Waste Management Plan. In addition to the Comprehensive General Plan and Zoning Ordinance, the Riverside County Solid Waste Management Plan (CoSWMP) implements land use considerations mandated by state law as they pertain to the County. The CoSWMP includes the Eagle Mountain Landfill as a tentatively identified waste disposal site. The County, however, is currently preparing the Riverside County Integrated Waste Management Plan (CIWMP) which will replace the CoSWMP. Until the CIWMP is approved, the County can consider projects identified as waste disposal sites in the CoSWMP. There is also "gap" legislation that allows the County to consider landfill projects that are not in the CoSWMP. The siting element of the proposed CIWMP also identified and describes the Eagle Mountain Mine site as a potential landfill.

3.6 Surface Water Drainage and Flooding

This section presents the existing conditions for surface water drainage and flooding in the vicinity of the Project site.

3.6.1 Regional Setting

The proposed Project is located in an arid desert region of eastern Riverside County, where the average annual precipitation is approximately 3.8 inches per year (GeoSyntec, 1992, 1993, 1995). Storms are characterized by heavy precipitation and short duration. The proposed Project site is located in a mostly undeveloped watershed sparsely covered with desert vegetation and with little impervious surface area. The watershed of the proposed Project contains the Eagle Mountains to the north, an alluvial fan to the southeast, and several dry creek beds that generally drain from west to east and from north to south. The geographical extent of the watershed in which the proposed Project site is located is shown in Figure 3-6.1. The drainage area of the Project site is approximately 6,400 acres, with runoff being directed to the east and southeast. Runoff patterns direct all flows within the Project area away from Joshua Tree National Park (JTNP). Water is typically present in drainage courses (also known as ephemeral creeks) only during or shortly after rain events. No other sources of surface water are present at the proposed Project site. The Metropolitan Water District of Southern California (MWD) owns and operates the Colorado River Aqueduct, which runs in a generally north/south direction to the east of the landfill specific plan boundary. The portion of the aqueduct east of the Project site is completely underground.

As a result of the area's topography, the lack of significant vegetation, and the intensity of rainfall, the area is subject to flash flooding in the dry washes and ephemeral creeks. The Federal Emergency Management Agency (FEMA), which sponsors the National Flood Insurance Program, has not mapped the landfill site (i.e., there is no official identification of the 100-year floodplain).

3.6.2 Historical Drainage Patterns

Prior to development of the Eagle Mountain Mine, two main watercourses, Eagle Creek and Bald Eagle Creek, flowed through the proposed Project site. Eagle Creek has a tributary area of 4,620 acres and drains from west to east outside the southern boundary of the proposed Eagle Mountain Landfill. Bald Eagle Creek, with a tributary area of 1,210 acres, drains from north to south through the eastern portion of the proposed Project site (see Figure 3.6-1). Before the development of the mine and the Townsite, these two creeks converged at what is now the Eagle Mountain Townsite. Runoff from the outlet was conveyed as sheet flow and discharged southeasterly over a wide alluvial fan southeast of the Townsite into the Chuckwalla Valley.

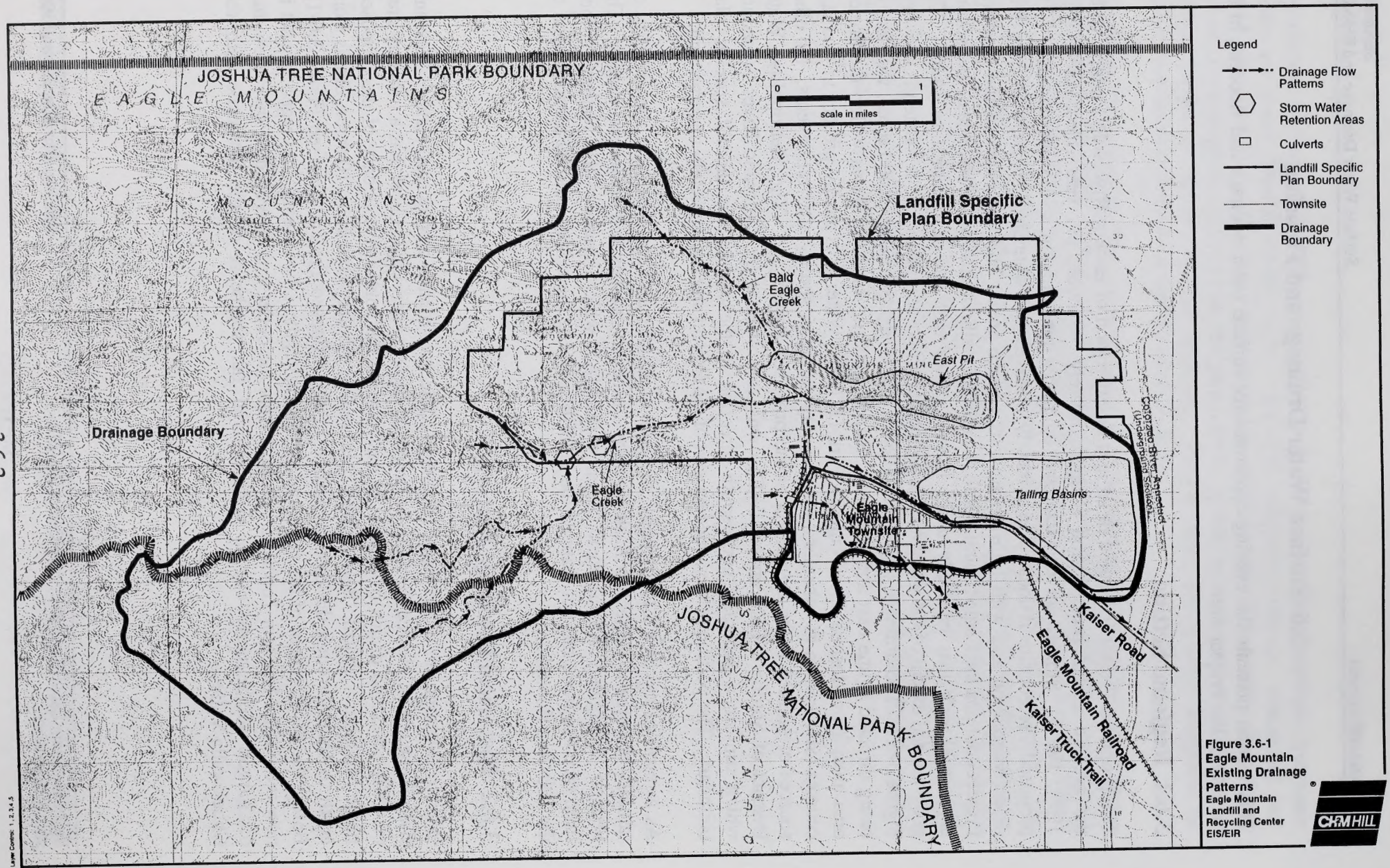


Figure 3.6-1
Eagle Mountain Existing Drainage Patterns
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 drainage 1/96

Layer Control: 1,2,3,4,5

3.6.3 Existing Drainage Patterns

In June 1994, a Clean Water Act Section 404 permit was issued for the previously proposed Eagle Mountain Landfill project. This permit contains construction requirements and mitigations for addressing construction impacts related to dry stream and drainage crossings in the Project site. The permit expiration date is June 1997.

The proposed Project site has two distinct current drainage patterns: (1) drainage associated with the Eagle Mountain Mine, and (2) drainage associated with the Eagle Mountain Townsite. Both drainage patterns are discussed below.

3.6.3.1 Eagle Mountain Mine

During operation of the Eagle Mountain Mine, flows from the two creeks were directed to the East Pit to prevent flooding of the mine processing facilities and the Eagle Mountain Townsite. To further minimize the potential for flooding, two retention areas were constructed on Eagle Creek to reduce flood peaks. The total area draining to the East Pit, including the Bald Eagle Creek, Eagle Creek, and area to the north of the pit, totals 6,300 acres, which is approximately 85 percent of the Project site watershed. Calculated surface runoff into the East Pit resulting from a 100-year, 24-hour storm event is approximately 6,000 cubic feet per second (cfs). Surface water is entirely retained in the East Pit with dissipation resulting through infiltration into bedrock or evaporation.

The remaining areas of the mine site do not drain to the East Pit. These areas drain as follows:

- Southeast of the East Pit, several tailings basins were created for the collection of fine tailings produced at the mine. These basins now function as individual retention basins for precipitation; no runoff is generated from this area.

- Runoff generated from the mine processing facilities (located at the terminus point of Kaiser Road and Eagle Mountain Rail Line just north of the Townsite) and adjacent hillside is intercepted by an existing earthen channel and conveyed southeast along Kaiser Road. The 100-year, 3-hour peak flow through this area is approximately 441 cfs. The south side of the channel has been reinforced with earthen berms to provide additional flood protection for the Townsite. Flows in the channel are then dispersed to the open desert areas to the southeast.

3.6.3.2 Townsite

With the development of the Townsite in the mid-1940s, drainage facilities were developed to accommodate storm flow from the Eagle Mountain tributaries to the west and runoff generated from the Townsite. Runoff from Eagle Mountain tributaries (a tributary area of approximately 431 acres) generates a 100-year, 3-hour peak flow of 681 cfs. These flows are

conveyed under the railroad embankment via an existing 60-inch culvert toward an unlined channel southwest of the Townsite. Flows generated from western portions of the Townsite are combined with tributary flows in the channel. The channel directs storm flows to two 72-inch culverts under the Eagle Mountain Railroad and along the Kaiser Truck Trail. From there, flows disperse to the open desert areas to the southeast beyond the sewage ponds.

Flows from the eastern portion of the Townsite and the area of the Eagle Mountain School drain as sheetflow through surface streets to the south and toward the railroad. The railroad embankment directs flows easterly to culverts and trestles under the tracks. Flows then disperse to the open desert areas to the southeast. Portions of an Eagle Mountain tributary west of the Townsite historically ponded just west of the railroad tracks. In major storms, this ponded water has overflowed the railroad tracks, causing erosion damage to the railroad track.

3.7 Biological Resources

Descriptions of biological resources included in this section are based on information provided in the previous EIS/EIR (BLM and County of Riverside, 1992), and the results of subsequent field reconnaissance, field surveys, and evaluation of relevant literature completed by CH2M HILL and Circle Mountain Biological Consultants for this EIS/EIR. Detailed information on field survey dates, methods, and personnel is provided in the Biological Technical Report in Appendix G of this EIS/EIR.

Special-status plant and animal species are those identified by state and federal statutes and by environmental organizations as warranting protection or special consideration to ensure their long-term survival. Special-status species include species listed as threatened or endangered, or as candidate species pursuant to the federal Endangered Species Act (ESA), which is implemented by the Department of Interior, U.S. Fish and Wildlife Service (USFWS) and the Department of Commerce, National Marine Fisheries Service (NMFS); and the California Endangered Species Act (CESA), which is implemented by the California Department of Fish and Game (CDFG). Additionally, the CDFG has developed lists of Species of Special Concern and Special Animals for California. The California Native Plant Society (CNPS), a nonprofit organization of lay persons and scientists that tracks the status of native California flora, also has established ratings for special-status plant species. The BLM also has a sensitive species list. In accordance with Section 7 of the ESA, two biological consultations have occurred involving the BLM and the USFWS, both of which resulted in opinions from the USFWS that the proposed Project would not jeopardize the desert tortoise or pupfish. In addition, a CDFG Section 2081 (incidental "take") permit was previously issued (see Section 1.4).

3.7.1 Regional Setting

The proposed Project site is located in the transition zone between the Mojave and Colorado Deserts. The Colorado Desert constitutes the northernmost, lowest elevation extension of the Sonoran Desert including the Salton Basin and the plains and bajadas of the lower Colorado River Valley. Geologic features and limited precipitation are the primary determinants of vegetation and wildlife resources in the Project area, with elements of the biota of both the Mojave and the Colorado Deserts represented.

The Project site is located near the eastern end of the Eagle Mountains with elevations on the site ranging from approximately 700 feet above mean sea level at the bottom of the East Pit to approximately 2,550 feet above sea level in the northeast portions of the site. Mined areas with steep rock walls and deep quarried pits comprise the central part of the site. Slopes and mounds of tailings from previous mining operations are significant features of the current topography on the south side of the East Pit. These areas provide very little soil, and plant cover is very limited.

Several relatively undisturbed canyons and rocky hillsides are included in the proposed landfill footprint. The total area of undisturbed land lying within the footprint of the proposed

landfill is approximately 1,038 acres. At the canyon mouths, alluvial fans have been created by rocks, and gravel has been transported by runoff from the mountains. Where the alluvial fans overlap at their lowest elevations, slopes are more gentle and soils are composed of smaller particles of gravel and sand. These areas are known as bajadas. Bajadas and the plant community types they support occupy the lowest elevations at the site and most of the areas adjacent to Eagle Mountain and Kaiser Roads, as well as much of the Eagle Mountain Railroad.

The existing Eagle Mountain Railroad originates at the Project site and extends 52 miles south and west to the Southern Pacific Railroad line at Ferrum Junction near the Salton Sea. The Eagle Mountain Railroad and the associated right-of-way cross the bajadas along the southeastern edge of the Eagle Mountains continuing southwest across the Chuckwalla Valley and the Interstate 10 freeway. South of the freeway, the rail line crosses the alluvial fan of the Chuckwalla Bench at the north end of the Chuckwalla Mountains, proceeding through a steep-sided rocky pass between the Orocopia and Chocolate Mountains, and descending to run along Salt Creek. The rail line continues southwest, passing through wetland areas near the Salton Sea to the connection with the Southern Pacific Railroad line at Ferrum Junction. Elevations on the rail line range from approximately 1,245 feet above sea level at the Project site to approximately 150 feet below sea level at Ferrum Junction.

3.7.2 Vegetation

Nomenclature for plant communities (i.e. associations of plant species that typically coexist in areas with particular physical characteristics) associated with various locations at or near the proposed Project site, as described in this section, follow Holland (1986). Plant species nomenclature follows Hickman (1993). A complete list of plant species observed in the vicinity of the proposed Project is included in Appendix G.

Figure 3.7-1 shows the distribution of the three primary plant community types in the proposed Project area: Sonoran Creosote Bush Scrub, Desert Dry Wash Woodland, and Desert Chenopod Scrub. Sonoran Creosote Bush Scrub is the most prevalent community type in the Project area, occurring on nearly all of the lower canyon slopes, bajadas, and sandy flats surrounding the Project site, the access roads, and along much of the rail line. The dominant shrub species is creosote bush in association with cheese bush and burrobush. Lower bajadas and sandy flats in this community type support a variety of cacti including golden cholla, pencil cholla, beavertail cactus, and hedgehog cactus.

Desert Dry Wash Woodland occupies washes and drainages dissecting the bajadas near the Project site, the access roads, and along some portions of the railway. This community type is particularly common in drainages in the bajadas south and east of the site along the Eagle Mountain and Kaiser proposed access roads. Where sheet runoff provides sufficient

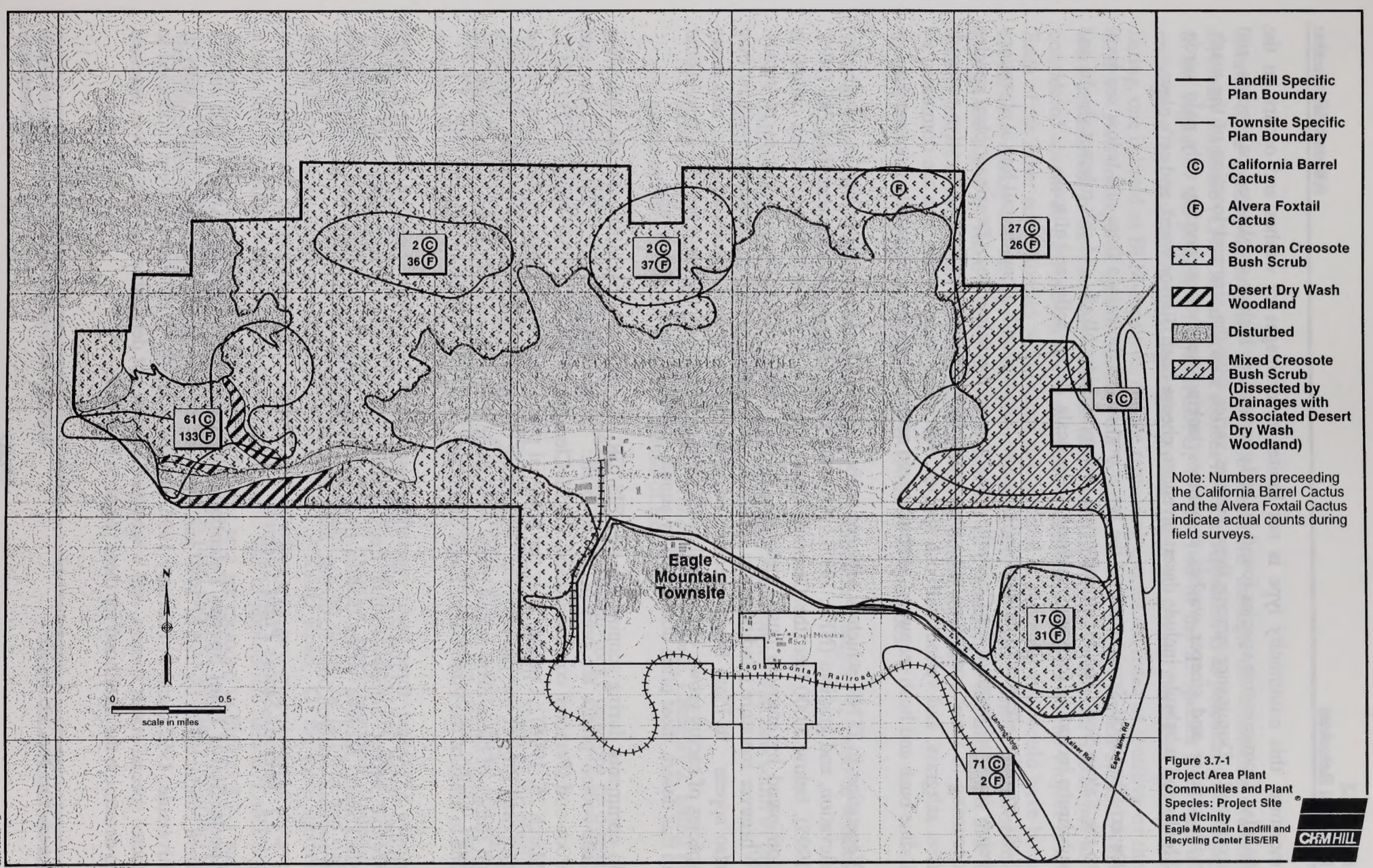


Figure 3.7-1
Project Area Plant Communities and Plant Species: Project Site and Vicinity
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

Layer Control: 1.2

m115231.T6.20 species 6/96

moisture, this community type is not limited to drainages or washes and occurs on the bajadas. Common tree species found in the larger washes include smoke tree, palo verde, and ironwood. Dominance among these species varies with the size and location of the wash, with smaller and steeper washes sometimes lacking trees or supporting only palo verde. Shrubs and subshrubs include desert-lavender, cheese-bush, Jimson weed, and cat's claw.

Desert Chenopod Scrub occupies the lower portions of the bajada from just below sea level to the Salton Sea. This community type is dominated by alkali- and salt-tolerant shrubs and subshrubs including four-wing saltbush, wheelscale, desert-holly, and allscale.

Soils are quite alkaline in the washes, drainages, and wetlands along the rail line at elevations below sea level south of the Coachella Canal toward the Salton Sea. Dominant plant species occurring in these conditions are salt-tolerant, including the non-native, invasive tamarisk tree, saltgrass, and various saltbush species. Wet alkali sinks in this area are dominated by iodine bush and bush seepweed, with scattered saltbush species occasionally interspersed.

Vegetation in JTNP, which is adjacent to the proposed Project, is dependent on topography, elevation, and gradient (NPS, 1995). As noted in the General Management Plan EIS (NPS, 1995), below 3,000 feet, the Colorado Desert (or low desert as it is sometimes called) is dominated by creosote bush, mesquite, yucca, ocotillo, and numerous species of cactus. Whenever moisture conditions are favorable, cat's claw, palo verde, and desert willow may also appear. In Pinto Basin, creosote bush, burrobush, several species of grass, and many species of cactus grow. Occasional sand dunes or basins of loose sand provide a rare habitat in this desert, most often dominated by annual grasses following spring rains.

In comments during scoping for this EIS/EIR, the NPS also has noted that the following deep-rooted plants are present in the basin: phreatophytes, Palo Verde, mesquite, and ironwood (Personal communication, Pat McClenahan/JTNP, to Thomas Peters/CH2M HILL, March 26, 1996). Concern over the potential presence of these plants in the vicinity of the proposed Project was raised by the NPS during the initial Project scoping process. However, no sitings of these deep-rooted plants were made during recent field visits to the Project site and to areas of the Pinto Basin, Eagle Mountains, and Coxcomb Mountains in JTNP.

Above 3,000 feet, three basic vegetation associations have been classified (Holland, 1986) *Mojave Mixed Steppe*—Joshua trees, galleta grass, needle grass; *Blackbrush Scrub*—blackbrush, Mojave yucca, Joshua tree, California juniper; and *Mojavean Pinyon/Juniper Woodland*—pinyon pine, scrub oak, and California juniper.

3.7.2.1 Special-Status Plant Species

Special-Status Plant Species Potentially Occurring in the Project Area. Field surveys were conducted in the fall of 1989 and 1990 for the previous EIS/EIR (BLM and County of Riverside, 1992), and in February 1995, for this EIS/EIR. Field surveys were conducted to locate special-status species, and where species were not detectable, the habitat was assessed to determine the likelihood for these plants to be found.

Twenty-three special-status plant species were identified through the California Natural Diversity Database (CNDDB) and other sources listed in Appendix G as potentially occurring in the region of the proposed Project (CDFG, 1994a); two of the 23 species are listed as endangered by state and federal agencies, six are listed as federal candidate species for listing, one is listed as BLM-sensitive, and the remaining species are listed as sensitive by the CNPS. Two endangered species (Santa Ana Woolly-star and Slender-horned spineflower) were considered in the previous EIS/EIR (BLM and County of Riverside, 1992) but are considered absent as their ranges are in western Riverside County, not in the Project area. Each of the other seven species with federal designations is perennial and would have been identifiable during the surveys performed in 1989, 1990, and 1995. These special-status species are listed in Table 3.7-1, which also includes an evaluation of the likelihood that a species occurs in the Project area, if it was not detected during surveys.

Special-status plant species occurring in JTNP (NPS, 1995) include:

- Little San Bernardino Mountain Gilia, *Gilia maculata,* Category 1, found in washes (Quail and Panorama Height washes)
- California ditaxis, *Ditaxis californica,* Category 2, found on alluvial fans south of the Eagle and Cottonwood Mountains
- Rock pennyroyal (Robison's monardella), *Monardella robisonii,* Category 2, found in quartz monzonite outcrops in Wonderland of Rocks
- Parish's daisy, *Erigeron parishii,* endangered, found near rocky outcrops of quartz monzonite, often in limestone

There are eight known state-listed plant species and subspecies in JTNP. None of the plants, federally or state-listed, is known to be in any developed areas. Oases contain fan palm species unique to the California desert. Although small, the fan palm oases contain large numbers of plants that are found nowhere else in JTNP.

Of the special-status species potentially occurring in the area, two (foxtail and barrel cactus) occur throughout the Project area, including the landfill footprint, Eagle Mountain Railroad, and access road. Two (Orocopia sage and unicorn plant) occur along the rail line and one (crucifixion thorn) occurs along the rail line and east of Kaiser Road. Of the three species with the potential for occurrence not observed in the Project area, two are considered to have a very low probability of occurrence in this area due to lack of appropriate habitat. Locations of special-status plant species identified in the Project area are included in Figures 3.7-1 and 3.7-2. Additional detailed information on special-status plant species potentially occurring in the Project area is included in Appendix G.

Table 3.7-1
Special-Status Plant Species Occurring or Potentially Occurring in the Proposed Project Area and Region
(Page 1 of 3)

Common Name *Scientific Name*	Federal Status[a]	State Status[a]	CNPS Status[b]	Probability of Occurrence[c]		
				Project Site	Access Roads	Rail Line
Utah Vine Milkweed *Cynanchum utahense*	--	--	List 4	Low	Low	Low
Spearleaf *Matelea parvifolia*	--	--	List 2	Low	Absent	Absent
Mesquite Neststraw *Stylocine sonorensis*	--	--	List 2	Low	Low	Low
Mecca-aster *Xylorhiza cognata*	C2	--	List 1B	Absent	Absent	Absent
Orcutt's Aster *Xylorhiza orcuttii*	C2	--	List 1B	Absent	Absent	Absent
Ribbed Cryptantha *Cryptantha costata*	--	--	List 4	Moderate	Moderate	Moderate
Winged Cryptantha *Cryptantha holoptera*	--	--	List 4	Moderate	Moderate	Moderate
Foxtail Cactus *Escobaria vivipara var. alversonii*	C2	--	List 1B	Occurs	Occurs	Occurs
California Barrel Cactus *Ferocactus acanthodes* var. *acanthodes*	BLM	--	--	Occurs	Occurs	Occurs
Munz's Cholla *Opuntia munzii*	C2	--	List 1B	Absent	Absent	Low
California Ditaxis *Ditaxis californica*	C2	--	List 1B	Moderate	High	High
Salton Milkvetch *Astragalus crotalariae*	--	--	List 4	Absent	Low (KR <820 feet)	Moderate
Sand-flat Locoweed *Astragalus insularis* var. *harwoodii*	--	--	List 2	Absent	Low	Low
Borrego Milkvetch *Astragalus lentiginosus* var. *borreganus*	--	--	List 4	Absent	Moderate (KR)	Moderate
Cove's Senna *Senna covesii*	--	--	List 2	Low	Absent	Low
Orocopia Sage *Salvia greatae*	C2	--	List 1B	Absent	Absent	Occurs
Desert Unicorn Plant *Proboscidea althaeifolia*	--	--	List 4	Moderate	Moderate	Occurs
Santa Ana Woolly-star *Eriastrum densifolium* ssp. *sanctorum*	FE	SE	List 1B	Absent	Absent	Absent

Table 3.7-1
Special-Status Plant Species Occurring or Potentially Occurring in the Proposed Project Area and Region

Common Name *Scientific Name*	Federal Status[a]	State Status[a]	CNPS Status[b]	Probability of Occurrence[c]		
				Project Site	Access Roads	Rail Line
Slender-Horned Spineflower *Dodecahema [Centrostegia] leptoceras*	FE	SE	List 1B	Absent	Absent	Absent
Thurber's Pilostyles *Pilostyles thurberi*	C3C	--	List 4	Low	Low	Moderate
Las Animas Colubrina *Colubrina californica*	C3C	--	List 4	Moderate	Low	Moderate
Crucifixion Thorn *Castela emoryi*	--	--	List 2	Moderate	Occurs KR	Occurs
Parish's Desert-thorn *Lycium parishii*	--	--	List 2	Low	Low	Low

a: State and federal status definitions

Federal

FE Listed endangered by the U.S. Fish and Wildlife Service
FT Listed threatened by the U.S. Fish and Wildlife Service
FPE Species that have either been proposed by the U.S. Fish and Wildlife Service or petitioned by the public for federal listing as an Endangered Species
FPT Species that have either been proposed by the U.S. Fish and Wildlife Service or petitioned for federal listing as a Threatened Species
C2 Category 2 Candidate Species, for which information is currently being collected to see if the species should be listed as threatened or endangered.
C3C Category 3 species, which are too common and/or widespread to warrant listing at this time.
BLM Considered sensitive by the Bureau of Land Management

State

SE Listed endangered by Fish and Game Commission
ST Listed threatened by Fish and Game Commission

b: California Native Plant Society status definitions

List 1B Plants rare, threatened, or endangered in California and elsewhere
List 2 Plants rare, threatened, or endangered in California but more common elsewhere
List 3 Plants about which more information is needed; a review list
List 4 Plants of limited distribution; a watch list

Table 3.7-1
Special-Status Plant Species Occurring or Potentially Occurring in the Proposed Project Area and Region

(Page 3 of 3)

Common Name *Scientific Name*	Federal Status[a]	State Status[a]	CNPS Status[b]	Probability of Occurrence[c]		
				Project Site	Access Roads	Rail Line

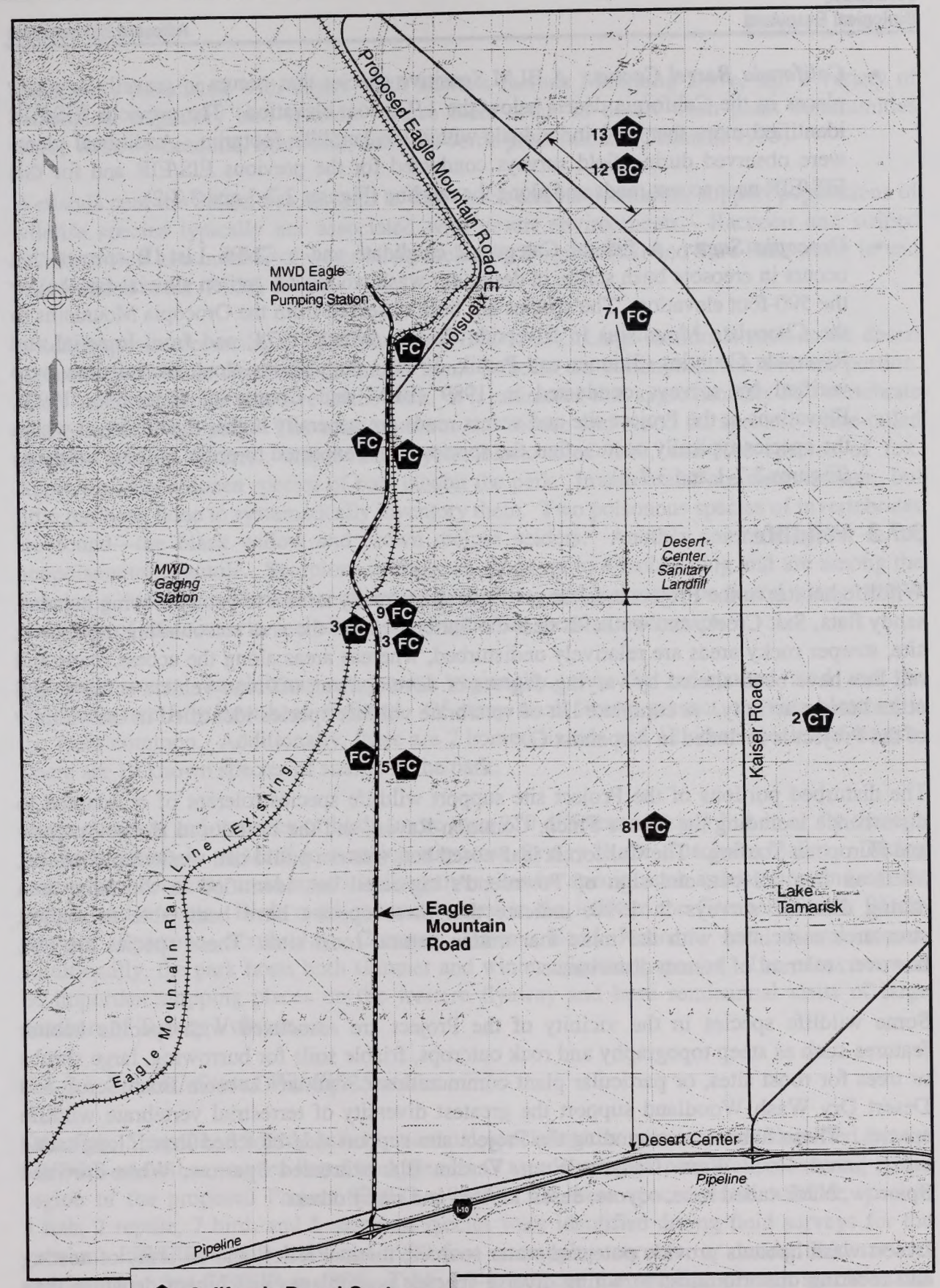
c: Probability of occurrence definitions

Occurs	Observed during 1989, 1990, or 1995 field surveys.
High	Species commonly reported in area; observed in adjacent regions; occurs in same habitat type as found onsite
Moderate	Habitat onsite is type used by the species, but Project site is peripheral to or out of its functional range; or the species was not detected during surveys, but may have been missed due to an inconspicuous appearance, or may germinate when specific conditions are met; the species would be expected onsite or in the vicinity at least every several years.
Low	The species is rarely reported from the area, or only historically, and the habitat type is occasionally but not primarily that in which the species is found; species may either occur in limited areas of suitable habitat, or was not detected during surveys of the area and would likely have been detected if present.
Absent	Habitat required by the species is absent; or, if there is suitable habitat, the Project site is sufficiently isolated from known populations that there is no, or very little, likelihood that the species would occur in the area; or surveys did not detect the species and were complete enough to ensure that if the species was present it would have been detected.
Unknown	Insufficient information was found to determine if the species occurs within the Project area at this time.
KR	Kaiser Road

Special-Status Plant Species Observed in the Project Area

Of the six BLM-sensitive, federally listed, or candidate species identified as potentially occurring in the Project area, the following were observed during surveys:

- ***Foxtail Cactus:*** A federal Category 2 candidate and a CNPS 1B species that occurs in sandy or rocky areas of creosote bush scrub at elevations between 245 and 1,970 feet (Hickman, 1993). The species was observed at the Project site, along the access roads and along the rail line during the 1995 surveys conducted in support of this EIS/EIR and 1989 surveys conducted by RECON in support of the previous EIS/EIR (Figures 3.7-1 and 3.7-2).



MWD: Metropolitan Water District of Southern California

Figure 3.7-2
Project Area Plant Communities: Kaiser Road and Eagle Mountain Road
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

- ***California Barrel Cactus:*** A BLM Sensitive species that occurs in gravelly or rocky places in the California desert below the 1,970-foot elevation. The previous EIS/EIR identified more than 800 individuals within the landfill's footprint. Additional plants were observed during field surveys conducted for the previous EIS/EIR and for this EIS/EIR near access roads and along the rail line (Figures 3.7-1 and 3.7-2).

- ***Orocopia Sage:*** A federal Category 2 candidate and a CNPS List 1B species that occurs in creosote bush scrub, in desert dry wash woodland, and on alluvial fans below the 590-foot elevation. The species has been observed from the Orocopia Mountains to the Chocolate Mountains in Riverside County (Munz, 1974) and from Imperial and Riverside Counties (Skinner and Pavlik, 1994). Populations along the rail line were verified by surveys conducted in 1989 (BLM and County of Riverside, 1992). Elevations at the Project site and access roads are generally higher than those at which the species typically occurs, thus the species is not expected to occur at these locations (Figures 3.7-1 and 3.7-2).

3.7.3 Wildlife

Wildlife habitat in the Project area ranges from steep, rocky terrain to gently sloping bajadas, sandy flats, Salt Creek, and wetlands near the Salton Sea. In the area surrounding the Project site, steeper rocky areas are relatively undisturbed, whereas areas along the access roads and rail line have been altered by varying degrees of development, off-road-vehicle activity, and other human activity. A complete list of vertebrate wildlife species identified in the vicinity of the Project is included in Appendix G.

The disturbed portions of the Project site support wildlife species tolerant of or adapted to disturbance including the House Finch, Common Raven, and the introduced House Sparrow and European Starling. The California leaf-nosed bat, western pallid bat, western pipestrelle, Mexican free-tail bat, and sign of Townsend's big-eared bat, identified in the mine area during directed surveys in 1990, indicate that these species have been able to exploit structures associated with the mine that mimic natural roost sites. These species are not, however, tolerant of human disturbance.

Some wildlife species in the vicinity of the Project are associated with specific habitat features such as steep topography and rock outcrops, friable soils for burrowing, large shrubs or trees for roost sites, or particular plant communities. Sonoran Creosote Bush Scrub and Desert Dry Wash Woodland support the greatest diversity of terrestrial vertebrate wildlife species. These habitats surrounding the Project site support side-blotched lizard, long-tailed brush lizard, Rock Wren, Canyon Wren, Verdin, Black-throated Sparrow, White-crowned Sparrow, black-tailed hare, coyote, desert kit fox, and many others.

Desert wash habitats provide potential water sources, thermal relief, and an array of nesting and roosting opportunities, attracting diverse species assemblages and higher densities than surrounding habitats. Densities of breeding birds in wash areas have been estimated at up to ten times the numbers found in adjacent desert scrub areas (BLM, undated). Some animals

specifically associated with desert wash habitats include Mourning Dove, and a variety of neotropical migratory bird species. Burro Deer occur in desert wash plant communities where willow, mesquite, ironwood, and palo verde predominate (Grinnell, 1933).

Wetlands near the Salton Sea, as well as Salt Creek and its tributaries, support populations of wildlife species typically not associated with desert environments. Raccoon and striped skunk, as well as a number of water birds, including Virginia Rail and Sora Rail, occur in and near wetland areas (BLM, 1982).

Wildlife species occurring in JTNP include (NPS, 1995): Large mammals such as the desert bighorn sheep, mule deer, and mountain lion. Bobcats are common in the western portion. Many small mammals also live in the park. It is estimated that approximately 350 vertebrate species inhabit the park. The most common are mouse and wood rat species, white-tailed antelope ground squirrel, chipmunk, coyote, black-tailed hare, and two species of fox. Approximately a dozen species of bats inhabit the park. Invertebrates are also common, but little has been done to systematically inventory them. Two poisonous species of invertebrates are found—the black widow and brown recluse spiders. Another common spider is the nonpoisonous tarantula. Scorpions in the park range up to 4 inches long and are among the less toxic varieties. Various centipedes, millipedes, and ticks can be found along with a multitude of other insects, including ants, dragonflies, beetles, and wasps.

Although several amphibians are known regionally, only the red-spotted toad and the California tree frog have been reported. Of many small lizards present, the side-blotched is the most common. Additionally, there are 2 horned lizards and 12 other species of lizards. There are 19 known species of snakes in the park.

Large numbers and varieties of birds (more than 270 different species) live in or fly through the park, which is adjacent to a major migratory flyway in the Coachella Valley. During stormy weather many areas are critical stopover sites for species such as loons, herons, egrets, grebes, and avocets. Birds most commonly seen in the unit are the Gambel's Quail, Black-throated Sparrow, Scrub Jay, Common Raven, Road Runners, and several wrens. Additionally, the park hosts both summer and winter migratory species. The oases seem to be important stopping places on the western flyaway and have semiannual visits of large numbers of Turkey Vultures.

3.7.3.1 Special-Status Wildlife Species

One fish, 5 reptile, 35 bird, and 11 mammal special-status species were identified by the CNDDB and other sources listed in Appendix G as occurring or potentially occurring in the region of the proposed Project (CDFG, 1994d). Of these special-status wildlife species, 1 fish, 2 reptile, 7 bird, and 5 mammal species were identified during field surveys for the previous EIS/EIR in fall 1989 and 1990 foot or trapping surveys, or during field surveys conducted in this EIS/EIR in 1995. Table 3.7-2 includes the standing of each special-status vertebrate wildlife species potentially occurring in the Project area, and an evaluation of the likelihood that the species occurs in the Project area, if it was not detected during surveys.

Table 3.7-2
Special-Status Vertebrate Wildlife Species Occurring or Potentially Occurring in the Project Area

Common Name *Scientific Name*	Federal Status[a]	State Status[a]	Probability of Occurrence[b]		
			Project Site	Access Roads	Rail Line
Fish					
Desert Pupfish *Cyprinodon macularius*	FE	SE	Absent	Absent	Occurs
Reptiles					
Desert Tortoise *Gopherus agassizii*	FT	ST	Occurs	Occurs (EM[c] & KR)[d]	Occurs
Common Chuckwalla *Sauromalus obesus*	C2	--	Occurs	Occurs (EM)	Moderate
Colorado Desert Fringe-toed Lizard *Uma notata notata*	C2	CSC	Absent	Absent	Absent
Flat-tailed Horned Lizard *Phrynosoma mcallii*	FPT	CSC	Absent	Absent	Moderate
Banded Gila Monster *Heloderma suspectum cinctum*	C2	CSC	Absent	Absent	Absent
Birds					
California Brown Pelican *Pelecanus occidentalis californicus*	FE	SE, SA	Absent	Absent	Absent
White-tailed Kite *Elanus caeruleus*	--	SA	Absent	Absent	Low
Bald Eagle *Haliaeetus leucocephalus*	FT	SE	Absent	Absent	Absent
Northern Harrier *Circus cyaneus*	--	CSC (nesting)	High (fall, winter)	High (fall, winter)	Occurs (fall, winter)
Sharp-shinned Hawk *Accipiter striatus*	--	CSC (nesting)	High	Occurs (Kaiser)	High
Cooper's Hawk *Accipiter cooperii*	--	CSC (nesting)	High	High	High
Swainson's Hawk *Buteo swainsoni*	--	ST (nesting)	Low (migr.)	Low (migr.)	Low (migr.)
Ferruginous Hawk *Buteo regalis*	C2	CSC (wintering)	Moderate (fall, winter)	Moderate (fall, winter)	Moderate (fall, winter)
Golden Eagle *Aquila chrysaetos*	--	CSC (nesting and wintering)	High (forag.)	High (forag.)	High (forag.)
Merlin *Falco columbarius*	--	CSC	Low (fall, winter)	Moderate (fall, winter)	Moderate (fall, winter)
Peregrine Falcon *Falco peregrinus*	FE	SE	Low (migrat.)	Low (migrat.)	Moderate (migrat.)
Prairie Falcon *Falco mexicanus*	--	CSC (nesting)	High	High	High
California Black Rail *Laterallus jamaicensis coturniculus*	C2	ST	Absent	Absent	Low

Table 3.7-2
Special-Status Vertebrate Wildlife Species Occurring or Potentially Occurring in the Project Area

Common Name *Scientific Name*	Federal Status[a]	State Status[a]	Probability of Occurrence[b]		
			Project Site	Access Roads	Rail Line
Yuma Clapper Rail *Rallus longirostris yumanensis*	FE	ST	Absent	Absent	Low
Western Snowy Plover *Charadrius alexandrinus nivosus*	C3C	CSC (breeding)	Absent	Absent	Moderate
Mountain Plover *Charadrius montanus*	C2	CSC (wintering)	Absent	Absent	Absent
Elf Owl *Micranthe whitneyi*	--	SE (breeding)	Absent	Absent	Absent
Western Burrowing Owl *Speotyto cunicularia hypugea*	C2	CSC	Moderate	Moderate	Moderate
Long-Eared Owl *Asio otus*	--	CSC	Absent	Low (fall, winter)	Low (fall, winter)
Vaux's Swift *Chaetura vauxi*	--	CSC	Moderate (migr.)	Moderate (migr.)	Moderate (migr.)
Gila Woodpecker *Centurus uropygialis*	--	SE	Low (forag., migr.)	Low (forag., migr.)	Moderate (forag., migr.)
Southwestern Willow Flycatcher *Empidonax tarillii extimus*	FPE	SE (breeding)	Low (migr.)	Low (migr.)	Low (migr.)
Purple Martin *Progne subis*	--	CSC (nesting)	Low (migr.)	Low (migr.)	Low (migr.)
Eagle Mountain Scrub Jay *Aphelocoma coerulescens cana*	C2	CSC	Low	Absent	Absent
Black-Tailed Gnatcatcher *Polioptila melanura*	--	SA	Occurs	Occurs (KR & EM)	Occurs
Bendire's Thrasher *Toxostoma bendirei*	--	CSC	Moderate	Moderate	Moderate
Crissal Thrasher *Toxostoma crissale*	--	CSC	Low	Low	Low
LeConte's Thrasher *Toxostoma lecontei macmillanorum*	C2	CSC	High	Occurs (KR & EM)	High
Loggerhead Shrike *Lanius ludovicianus*	--	CSC	Occurs	Occurs (KR & EM)	High
Arizona Bell's Vireo *Vireo bellii arizonae*	--	SE (nesting)	Absent	Absent	Absent
Least Bell's Vireo *Vireo bellii pusillus*	FE	SE (breeding)	Absent	Absent	Absent
Virginia Warbler *Vermivora virginiae*	--	CSC	Low (migr.)	Low (migr.)	Low (migr.)
Yellow Warbler *Dendroica petechia*	--	CSC (nesting)	Occurs (migr.)	High (migr.)	High (migr.)

Table 3.7-2
Special-Status Vertebrate Wildlife Species Occurring or Potentially Occurring in the Project Area

Common Name *Scientific Name*	Federal Status[a]	State Status[a]	Probability of Occurrence[b]		
			Project Site	Access Roads	Rail Line
Yellow-Breasted Chat *Icteria virens*	--	CSC (nesting)	Occurs (migr.)	Low (migr.)	Moderate (migr.)
Tricolored Blackbird *Agelaius tricolor*	C2	CSC	Absent	Absent	Absent
Mammals					
California Leaf-nosed Bat *Macrotus californicus*	C2	CSC	Occurs	High	High
Arizona Myotis *Myotis lucifugus occultus*	C2	CSC	Absent	Absent	Absent
Arizona Cave Myotis *Myotis velifer brevis*	C2	CSC	Absent	Absent	Absent
Spotted Bat *Euderma maculatum*	C2	CSC	Within range	Within range	Within range
Townsend's Big-eared Bat *Plecotus townsendii townsendii*	C2	CSC	Occurs	High	High
Pallid Bat *Antrozous pallidus*	--	CSC	Occurs	High	High
Pocketed Free-tail Bat *Nyctinomops femorosaccus*	--	CSC	Within range	Within range	Within range
California Mastiff Bat *Eumops perotis californicus*	C2	CSC	Within range	Within range	Within range
American Badger *Taxidea taxus*	--	CSC	Occurs	Occurs (KR)	High
Yuma Mountain Lion *Felis concolor browni*	C2	CSC	Unknown	Unknown	Unknown
Nelson's Bighorn Sheep *Ovis canadensis nelsoni*	--	SA	Occurs	Low	Occurs

(a) State and federal status definitions

Federal

FE Listed endangered by the USFWS

FT Listed threatened by the USFWS

FPE Species that have either been proposed by the USFWS or petitioned by the public for federal listing as an Endangered Species

FPT Species that have either been proposed by the USFWS or petitioned for federal listing as a Threatened Species

C2 Category 2 Candidate Species, for which information is currently being collected to see if the species should be listed as threatened or endangered.

C3C Category 3 Candidate Species, which are too common and/or widespread to warrant listing at this time.

BLM Considered sensitive by the Bureau of Land Management

State

SE Listed endangered by Fish and Game Commission

ST Listed threatened by Fish and Game Commission

CSC California Species of Special Concern, which when encountered, should be reported to the Department, and for which impacts may be considered significant under the California Environmental Quality Act, depending on the specific situation

SA Special Animal, which is an animal fully protected by the state

Table 3.7-2
Special-Status Vertebrate Wildlife Species Occurring or Potentially Occurring in the Project Area

(b) Probability of occurrence definitions

Occurs	Observed during winter 1995 surveys or during RECON's earlier surveys.
High	The species is commonly reported from the area, has been observed in adjacent regions, occurs in the same habitat type as found on-site, and may with some certainty be observed at most, daily, and at least, yearly, within the Project area.
Moderate	The habitat on-site is the type used by the species, but the site is peripheral to or out of its functional range, or the species is a migrant that may incidentally be found within the Project area; the species would be expected onsite or in the vicinity at least, every several years, and at most, monthly, particularly during the migratory season for applicable species.
Low	The species is rarely reported from the area, or only historically, and the habitat type is occasionally used by the species; the species may either occur in limited areas of suitable habitat, or be solely incidental to the site during the migratory period.
Absent	Habitat required by the species is absent; or, if there is suitable habitat, the Project site is sufficiently isolated from known populations that there is no, or very little, likelihood that the species would immigrate into the area; in the case of migratory passerines, the sites may be within the flyway and the birds may stop to rest or forage, but they would not remain onsite or in the area for more than a few hours or days.
Within Range	The site is within the known range of the species, but the actual likelihood range of occurrence is unknown at this time.
Unknown	Insufficient information was found to determine if the species occurs within the Project area at this time.

(c) EM = Eagle Mountain Road

(d) KR = Kaiser Road

Special-status species reported from Joshua Tree National Park include (NPS, 1995):

- Desert tortoise (Mojave Desert population), *Gopherus agassizii,* FT, FSS, ST
- Chuckwalla, *Sauromalus obesus,* Category 2
- Colorado Desert fringe-toed lizard, *Uma notata notata,* Category 2, CSC
- Flat-tailed horned lizard (known to exist within 5 miles of the park), *Phrynosoma mcallii,* FPT, FSS
- Prairie Falcon, *Falco mexicanus,* CSC
- California Horned Lark, *Eremophila alpestris actia,* Category 2, CSC
- Eagle Mountain Scrub Jay, *Aphelocoma coerulescens cana,* Category 2, CSC
- Loggerhead Shrike, *Lanis ludovicianus,* Category 2, CSC
- Palm Springs little pocket mouse, *Perognathus longimembris bangsi,* Category 2, CSC
- American badger, *Taxidea taxus,* CSC
- California leaf-nosed bat, *Macrotus californicus,* Category 2, CSC
- Pallid bat, *Antrozous pallidus,* CSC
- Townsend's western big-eared bat, *Plecotus townsendii townsendii,* Category 2, CSC
- Greater western mastiff bat, *Eumops perotis californicus,* Category 2, CSC
- Mountain quail, *Oreotyx pictus,* Category 2

Special-Status Wildlife Species Occurring in the Vicinity of the Project

Unlike plant species, wildlife species are mobile. Species that were not observed during field surveys could move through or otherwise temporarily occupy habitats in the Project area. Special-status species that were observed during field surveys, or that are considered likely to occasionally use Project area habitats, are discussed below. The distribution of special-status wildlife species observed in the vicinity of the Project is shown in Figures 3.7-3 and 3.7-4.

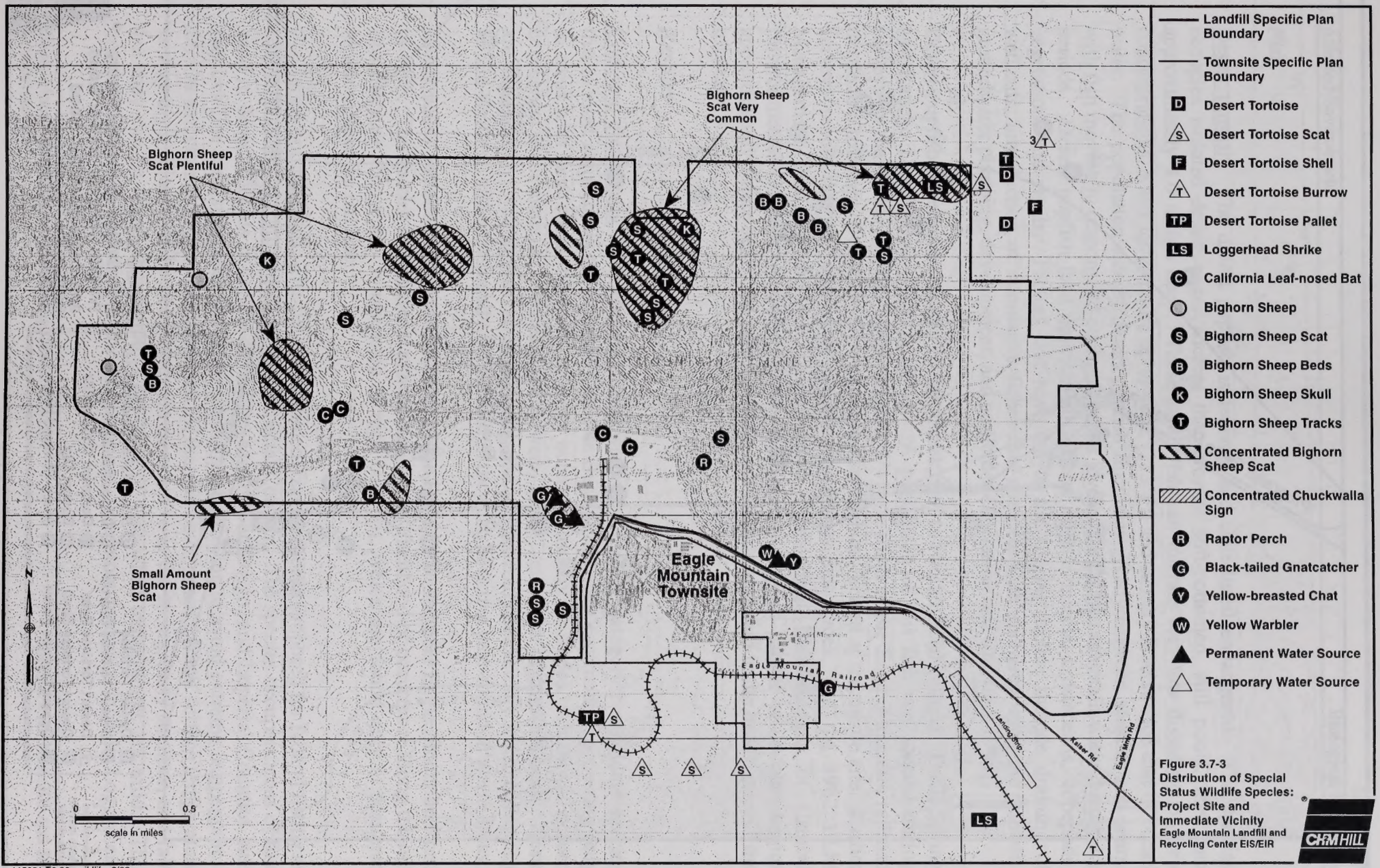


Figure 3.7-3
Distribution of Special Status Wildlife Species: Project Site and Immediate Vicinity
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2MHILL

m115231.T6.20 wildlife 6/96

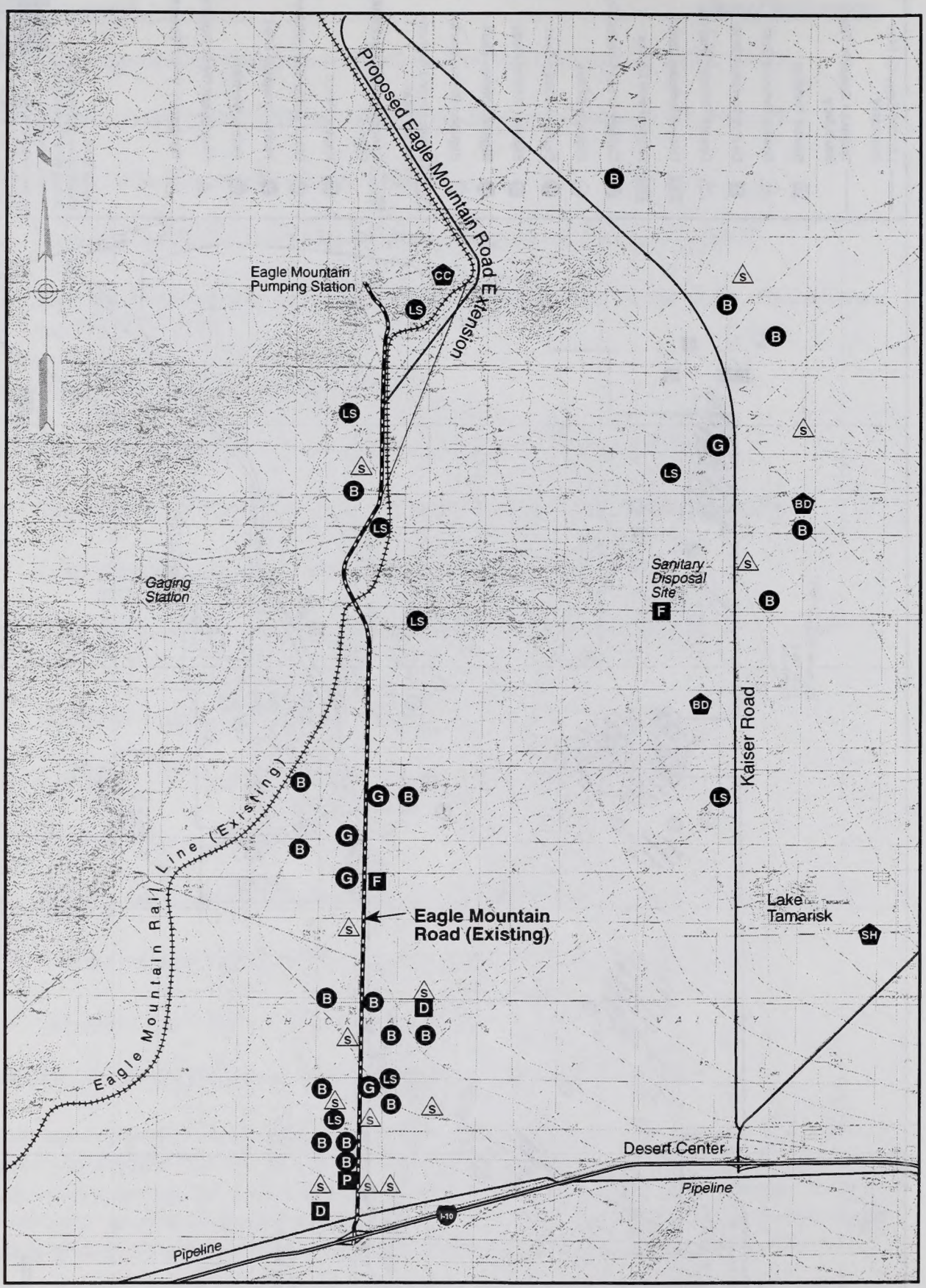


Figure 3.7-4
Distribution of Special Status Wildlife Species: Kaiser Road and Eagle Mountain Road
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 bio 6/96

Fish

Desert pupfish. The desert pupfish is federal- and state-listed endangered. The species occupies isolated desert water sources that provide soft-bottomed, still pools, less than approximately 4.0 inches deep. These small fish can tolerate very low dissolved oxygen concentrations, water temperature up to 45°C (113°F,) and salinity levels twice that of ocean water. The population size of desert pupfish fluctuates greatly between seasons and years, with fish moving in response to changing water levels to areas that maintain water during dry periods. Desert pupfish feed opportunistically on aquatic insects, crustaceans, copepods, vegetation, and snails. Factors that have led to the species decline include draining of wetlands, introduction of non-native fishes that compete with and prey upon the pupfish, groundwater pumping, development, and pesticides (Thelander and Crabtree, 1994).

Desert pupfish have been reported in Salt Creek, and in two artificial refugia: Oasis Spring and Rancho Dos Palmas (CDFG, 1994d). A population of this fish was located during surveys by the CDFG in 1990, approximately 1/4 mile south of the Eagle Mountain railroad trestle in a tributary of Salt Creek, with appropriate habitat located at the trestle site. Earlier surveys report that the species is present throughout Salt Creek, and the 1982 BLM Management Plan for the Salt Creek Desert Pupfish/Rail Habitat Area of Critical Environmental Concern (ACEC) indicates that the best pupfish habitat in the area begins approximately 1 mile below the railroad trestle and extends upstream to the headwaters of the tributary.

Reptiles

Common chuckwalla. The common chuckwalla is a federal Category 2 candidate species that is most abundant in the Sonoran Creosote Bush Scrub plant community, occurring only in areas with large rocks, boulders, or rocky outcrops, usually on slopes. Chuckwallas feed entirely on plant material, especially the flowers, leaves, and fruits of creosote bush. Nests are dug in sandy, well-drained soils. Chuckwallas are generally active only from mid-spring to mid-summer, and occasionally in fall, though they can be active year-round in warm areas.

Chuckwallas were detected during surveys of the Project site and near Eagle Mountain Road in 1995. The species is considered to have a moderate likelihood of occurrence along the rail line, because this reptile is restricted to rock outcrops, which are found only at scattered locations near the rail line.

Flat-tailed horned lizard. The flat-tailed horned lizard has been proposed for federal listing as threatened and is a California Species of Special Concern. The species occupies areas of fine sand in desert habitats in central Riverside, eastern San Diego, and Imperial Counties, and requires fine sand substrates that allow subsurface burrowing to avoid extreme temperatures. Shrubs and clumps of grass also are used for thermal cover when the soil surface temperature is very high. Flat-tailed horned lizards are most active in the spring, early summer, and fall, but they can be found above ground any time of year when temperatures are mild. This species is thought to breed in the early spring. Predators probably include Loggerhead

Shrike, Roadrunners, various raptors, Common Raven, foxes, and coyotes. Habitat loss to development, and recreation, such as off-highway vehicle use are the principal threats to species persistence. (Zeiner et al., 1988).

No evidence of flat-tailed horned lizards was found by either RECON or Circle Mountain Biological Consultants. Flat-tailed horned lizards could occur in the vicinity of the southern terminus of the rail line near Ferrum Junction, but are considered absent from all other Project areas.

Desert tortoise. The desert tortoise is federal and state listed as threatened. The general distribution of desert tortoise from the Salton Sea to the Project site is shown in Figure 3.7-5. The species inhabits desert scrub, desert wash habitats, and Joshua tree woodland (Zeiner et al., 1988). Tortoises feed primarily on spring annual grasses and forbs, as well as perennial grasses. They are most active in the spring and fall months, and escape extreme temperatures of summer and winter by remaining in underground burrows, hibernating in the winter months. Desert tortoises breed and produce eggs most often in spring, although fall mating also occurs. Female tortoises lay from two to nine eggs often in the soil near the entrance to a burrow. Home range sizes are estimated to be between 11 and 53 hectares (Berry et al., 1986). Tortoises are detected by burrow openings, scat (droppings), carcasses, and other sign. Threats to continued existence of this species include habitat destruction, degradation and fragmentation from development, human contact and related direct mortality, collection for pets, Upper Respiratory Tract Disease (URTD), and possible increased predation on hatchlings from increasing predator population by Common Raven, coyote, etc. (USFWS, 1994).

Tortoises were also observed during monitoring and radio telemetry work conducted in 1993 and 1994 by RECON. Twenty-seven adult female tortoises were marked and equipped with radio transmitters in the course of the telemetry study. Eight of these were located north of Interstate 10 in the Eagle Mountain study area, and 19 in the Chuckwalla Bench study area north of the Chocolate Mountains and south of Interstate 10. Ten adult females, 38 adult males and 14 juvenile tortoises, also were observed and marked during this study, but were not fitted with transmitters. The study also monitored 11 train trips on the Eagle Mountain Railroad during which 23 tortoises were removed from the railroad berm or tracks. Most of these animals were previously marked from the radio telemetry study. None of the animals observed during monitoring and telemetry work showed symptoms of disease.

In the vicinity of the proposed Project site, the desert tortoise is known to occur at the southwest base of the Coxcomb Mountains and at the base of Eagle Mountains approximately 6 air miles northwest of Desert Center, as well as throughout the Chuckwalla Bench and south Pinto Basin. The Chuckwalla Bench had the highest recorded density desert tortoise population in the Colorado Desert, estimated at 279 tortoises per square mile (Berry et al., 1983). However, areas of high tortoise density may be patchy on the Chuckwalla Bench, with "relatively small islands of high density" (BLM, undated). Densities in the Orocopia Mountains Wilderness are lower, estimated between 20 to 50 per square mile, and

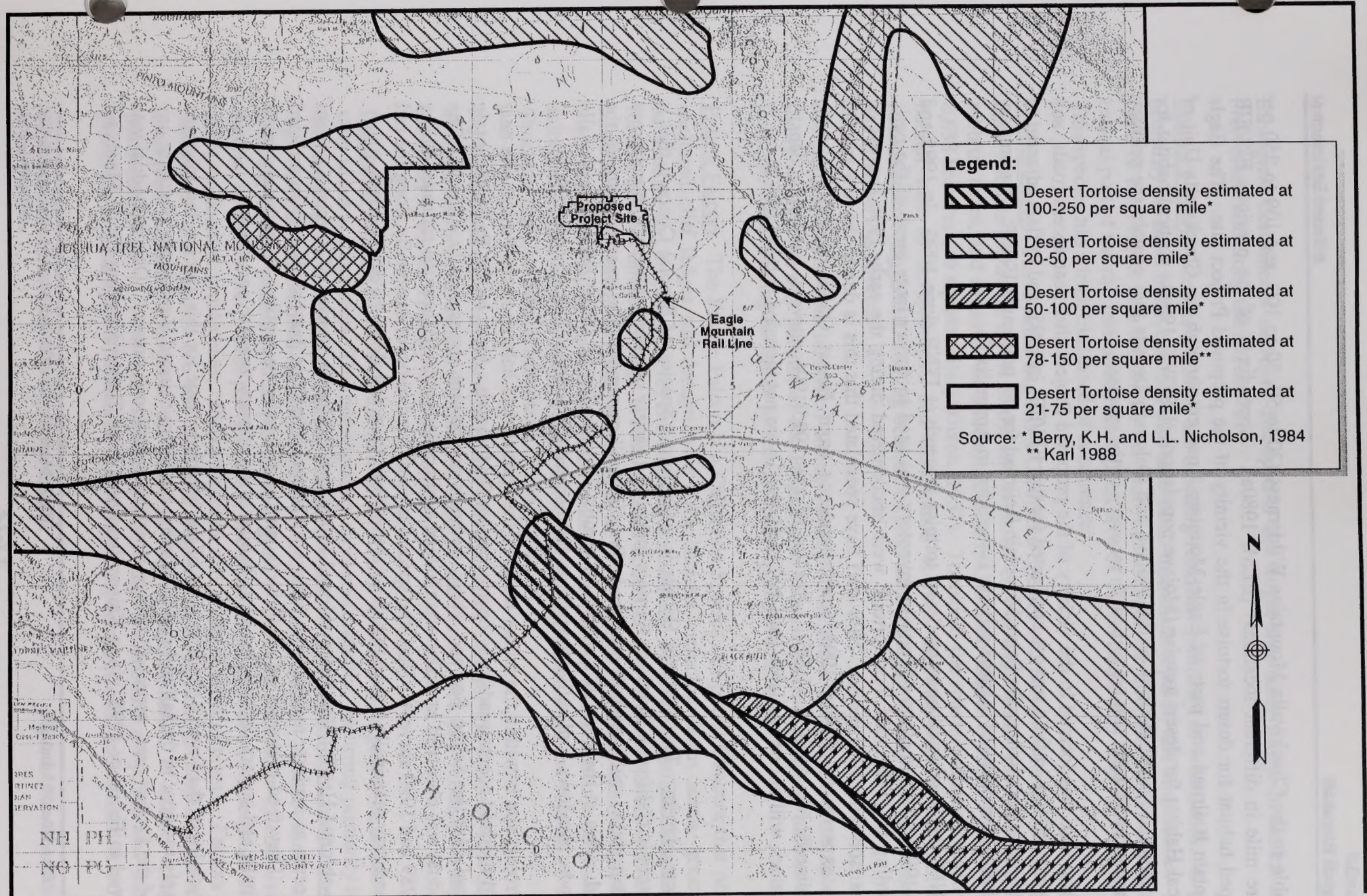


Figure 3.7-5
General Distribution of Desert Tortoise: South of I-10 to Project Site
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

variable in the Chuckwalla Mountains Wilderness (20 to 50, 50 to 100, and 100 to 250 per square mile in different locations) (BLM, 1980a). Appendix G of the previous EIS/EIR mapped habitat for desert tortoise in the vicinity of the proposed Project site. The Eagle Mountain Railroad and parts of Eagle Mountain Road cut through the Chuckwalla Unit of Critical Habitat for desert tortoise (Mojave population) (USFWS, 1994). Critical habitat for the tortoise includes portions of the Mojave and Colorado Deserts that contain the primary constituents and areas that are critical to recovery of the species.

Tortoise sign was located in the vicinity of the proposed Project site, near access roads, and along the rail line in field surveys conducted for this EIS/EIR in 1995, and in flats adjacent to the Project site and along the Eagle Mountain Railroad for the previous EIS/EIR. A summary of tortoise sign detected in these surveys is included in Appendix G.

The NPS has conducted ongoing desert tortoise research at JTNP since 1990. In 1995 and early 1996, a new method of tortoise inventory was used to survey large areas of the park. According to JTNP staff, few tortoise were encountered during the early 1996 surveys in comparison with 1995 results. NPS staff have speculated that this is due to the low rainfall levels experienced during 1995 (correspondence from Ernest Quintana/JTNP, to Joan Oxendine/BLM, April 12, 1996). Results of the 1995/1996 surveys, including density estimators, will not be available until 1997 and, thus, were not included in this EIS/EIR.

Birds

Northern Harrier. The Northern Harrier is a California Species of Special Concern that is migratory in California. Northern Harriers forage in a variety of open habitats, from meadows to desert sinks, with wetlands preferred. Prey is small mammals. This species nests on the ground, often at the edge of a marsh, in shrubs. Destruction of native habitats, especially wetlands, meadows, and native grasslands, has harmed this species (Zeiner et al., 1990a).

The Project site is within the winter range of the species, and habitat on the Project site near the rail line and access roads may be appropriate for foraging. Areas on the Eagle Mountain Railroad near the Salton Sea and where wetlands are present are especially suitable. One individual was observed in desert wash habitat north of Interstate 10, near the railroad, during fall 1989 and 1990 surveys. Thus, the species is considered to occur seasonally along the rail line, and may seasonally forage in habitat at the Project site and along the access roads.

Sharp-shinned Hawk. The Sharp-shinned Hawk is a California Species of Special Concern that occurs as a winter resident in a variety of California habitats, but breeds only in forested areas. They feed primarily on small birds, and occasionally on reptiles, amphibians, small mammals, and insects. Loss of breeding habitat is the primary threat to persistence.

The vicinity of the Project site is outside of the breeding range for this species, but migrants are likely to occur in the fall and spring months, and Sharp-shinned Hawks may winter in any part of the Project area, especially where riparian vegetation is present. One individual was observed in February 1995, along Kaiser Road near Lake Tamarisk during Circle Mountain

Biological Consultants' surveys. The species also might seasonally forage in habitat at the Project site and along the rail line.

Cooper's Hawk. Cooper's Hawks are breeding residents primarily of woodlands. It preys primarily on small birds, but may also take small mammals, reptiles, and amphibians. Most parts of the Project area are within the year-round ranges for Cooper's Hawk, although the central part of the rail line passes through an area of winter-range only (Zeiner, et al, 1990a). This species has a high likelihood of occurrence.

Golden Eagle. The Golden Eagle is a California Species of Special Concern that forages in open habitats including desert scrub, and nests on cliff or large trees. Prey species include rabbits, hares, and rodents. In Southern California, Golden Eagles occupy territories up to 6,638 hectares (36 square miles) (Dixon, 1937). Threats to the species primarily result from habitat loss to development, and disturbance at nest sites leading to nest failure or abandonment. Egg shell thinning because of pesticides bioaccumulating in prey species also has affected this species.

No Golden Eagles were identified during surveys of the Project vicinity, but the species is likely to occur in any portion of the Project area because suitable foraging habitat occurs throughout and nesting habitat is present in nearby mountainous areas.

Prairie Falcon. The Prairie Falcon is a California Species of Special Concern that nests on sheltered cliff ledges and forages over open habitats including desert scrub, grasslands, savannahs, and croplands. Prey includes small mammals, birds, and reptiles. Home ranges for this bird are unusually large in relation to its body size, and in the Mojave Desert average 5,940 hectares (32 square miles) (Harmata et al, 1978). Threats to this species include habitat loss, pesticide (DDE) poisoning, disturbance at nest sites, and collecting of young for falconry (Zeiner et al, 1990a). Prairie Falcon eyries (cliff nest sites) are reported from the Orocopia and Chuckwalla Mountains (BLM, 1980a).

No Prairie Falcons were observed during surveys of the sites for the previous EIS/EIR, but appropriate foraging habitat is present throughout the Project area and suitable nesting sites are likely to occur in nearby mountainous areas.

California Black Rail. The California Black Rail is a federal Category 2 candidate and is state listed as threatened. This nonmigratory species is secretive, occurring primarily in tidal salt marshes, but also in freshwater and brackish marshes. Optimal habitat is well-developed, high marsh, characterized by stable water levels and rare flooding. Dense stands of low-growing aquatic plants, such as pickleweed, grow in a mosaic with drier upland areas and patches of open water, which provides cover and plant materials needed for nesting. The bird feeds on insects, crustaceans, other arthropods and seeds of aquatic plants. Factors in the decline of this species are the loss and fragmentation of well-developed marshes and emergent wetlands throughout the state, as well as contamination of marsh areas with pollutants toxic to birds and other wildlife, water reclamation projects, and increased predation in more upland habitats from heron species, domestic cats, and nonnative red foxes.

Appendix F of the previous EIS/EIR cites a Bureau of Reclamation study in 1989, in which Black Rails were observed in the Salt Creek Area north of the rail line. California Black Rails are not expected to be present in the immediate vicinity of the rail line, but do occur within one mile of the Project area. The species is absent from the Project site and access roads, because suitable habitat is lacking.

Yuma Clapper Rail. The Yuma Clapper Rail is federal-listed endangered and state-listed threatened. Yuma Clapper Rails are residents of freshwater marshes along the Colorado River and Salton Sea in California, requiring areas of regenerating marsh for foraging and mature stands of cat-tail for nesting in the Salton Sea area. The species feeds on crayfish, small fishes, beetles, and isopods found near open water. This rail is not considered migratory, although the juveniles disperse following the breeding season. Factors that have contributed to this species decline include loss and fragmentation of wetlands, especially on the Colorado River, due primarily to dam construction, water diversions, dredging, and mosquito abatement programs.

Yuma Clapper Rails were not observed near the Eagle Mountain Railroad (BLM and County of Riverside, 1992). Lack of sufficiently extensive habitat patches close to the rail line indicates that it is unlikely that the species occurs in this portion of the Project area. No suitable habitat is present near the Project site or access roads and the species is considered absent from these locations.

Western Burrowing Owl. The Western Burrowing Owl is a federal Category 2 candidate species and a California Species of Special Concern. The species is nonmigratory in desert scrub and other open habitats in southern California where primary prey items include insects, small mammals, reptiles, amphibians, birds, and carrion. Unlike other owls, the species is active during daylight hours with peak activity occurring in the early morning and evening. Western Burrowing Owls nest and roost in underground burrows excavated by other species. Western Burrowing Owls form pairs in winter or early spring, and eggs are laid mainly from mid-March to early May, although breeding could extend through the summer months (Zarn, 1974; Zeiner et al, 1990a). Predators include Prairie Falcon, Swainson's Hawk, Red-tailed Hawk, Northern Harrier, Ferruginous Hawk, Golden Eagle, coyotes, foxes, and domestic cats and dogs. Primary threats to this species include habitat loss, indirect poisoning (through ingesting poisoned prey), predation by domestic animals, and collisions with vehicles (Zeiner et al, 1990a).

Western Burrowing Owls were not observed in surveys of the Project areas for the previous EIS/EIR or for this EIS/EIR. Suitable habitat is present in all Project areas that are relatively level and free of predominantly rocky substrates (i.e., along the Eagle Mountain Railroad, access roads, and on the southern and eastern portions of the proposed Project). The species is considered to have a moderate likelihood of occurrence in these areas.

Eagle Mountain Scrub Jay. The Eagle Mountain Scrub Jay is a federal Category 2 candidate and a California Species of Special Concern that is endemic to pinyon-juniper woodland and

scrub oak habitats above 1,200 m, (about 3,600 feet) in parts of the Little San Bernardino Mountains, including Eagle Mountain, within JTNP (Pitelka, 1951; Miller and Stebbins, 1964). The population is considered to have originated by hybridization between coastal and interior populations of Scrub Jays (Peterson, 1990). The subspecies is omnivorous, feeding primarily on acorns and nuts, as well as fruits, seeds, insects and other invertebrates, caching food in the soil (Zeiner et al, 1990), or tree bark. Eagle Mountain Scrub Jays nest beginning in early April (Miller and Stebbins, 1964). Predators include hawks, small mammals, and ravens. Threats to the subspecies are related to its limited geographic distribution.

A population of Eagle Mountain Scrub Jay is located approximately 18 miles from the Project site in pinyon-juniper and scrub oak woodland habitat (BLM and County of Riverside, 1992). No habitat for the species occurs in the Project area.

Black-tailed Gnatcatcher. The Black-tailed Gnatcatcher is considered a California Special Animal by CDFG. Preferred habitat for this species is desert wash and desert scrub. Black-tailed Gnatcatchers are absent in habitats heavily invaded by non-native tamarisk trees. The species feeds on insects and spiders, and nests in shrubs approximately 2 to 3 feet above ground level. The breeding season for Black-tailed Gnatcatchers peaks in April and May. Threats include habitat loss and cowbird parasitism (Zeiner et al, 1990a). The species was observed in surveys conducted in 1989-1990 and 1995 near Kaiser and Eagle Mountain Roads and on the Project site.

LeConte's Thrasher. LeConte's Thrasher is a federal Category 2 candidate and a California Species of Special Concern. This species is a year-round resident of a variety of desert habitats, including creosote bush scrub, saltbush scrub, and Joshua tree woodland; feeding on insects and other terrestrial arthropods, and occasionally on seeds, small lizards, and other small vertebrates. Nesting season extends from January to early June, with nests constructed in dense, spiny shrubs or densely branched cacti. This species is particularly wary of humans. Threats to this species include disturbance from off-highway vehicles and other human activity, and habitat loss from agriculture and development (Zeiner et al, 1990a).

LeConte's Thrasher was observed during 1995 surveys near Kaiser and Eagle Mountain Roads and could nest in habitat at the Project and along the rail line, especially in areas of dense spiny shrubs.

Loggerhead Shrike. The Loggerhead Shrike is a California Species of Special Concern that occupies a variety of habitats from hardwood savannahs to Joshua tree woodland and desert riparian. Scattered perch sites such as fence posts, shrubs, utility lines, and trees are an important habitat component. Shrikes feed primarily on large insects, also small mammals, birds, amphibians and reptiles, fish, carrion, and other invertebrates. Loggerhead Shrikes are known for caching their prey on thorns, barbed wire, and sharp twigs. They breed from March to May. Threats to the species include pesticide poisoning and nest predation by magpies (Zeiner et al., 1990a).

Loggerhead Shrikes were observed in 1995 surveys near Kaiser and Eagle Mountain Roads and within the Project site, and by 1989-90 surveys (location not given). Suitable foraging and breeding habitat for the species occurs at the Project site and near the access roads and rail line. It is expected to occur throughout the Project area.

Yellow Warbler. Yellow Warbler is a California Species of Special Concern that breeds in riparian woodlands, montane chaparral, open ponderosa pine, and mixed conifer habitats with a brushy understory. This migratory species feeds on insects, spiders, and occasionally berries. Brown-headed Cowbird nest parasitism has contributed to the species' reduced numbers (Zeiner et al, 1990a).

The Yellow Warbler is expected to occur only as a rare migrant in any of the Project locations, especially where wash and riparian associated habitat is present. Two were observed during bat surveys at the reservoir in the Townsite (Brown, 1990) and they have been observed in wash areas in the Chuckwalla Bench ACEC (BLM, undated).

Yellow-breasted Chat. Yellow-breasted Chat is a California Species of Special Concern that breeds and migrates through coastal California and the foothills of the Sierra Nevada in thick clumps of brush or willows, usually in riparian areas. It feeds on insects, spiders, berries, and other fruits (Zeiner et al, 1990a.)

This species could be expected as a rare migrant through the Project area and one individual was observed on the Townsite during 1990 bat surveys (Brown, 1990). The species is not expected to occupy habitats throughout the Project area.

Mammals

California leaf-nosed bat. The California leaf-nosed bat is a federal Category 2 candidate and a California Species of Special Concern known from Riverside, San Bernardino, San Diego, and Imperial Counties in California. Rugged, rocky terrain with mines and caves surrounded by desert scrub, desert wash, desert riparian, desert succulent scrub, alkali desert scrub, and palm oasis, below an elevation of approximately 2,000 feet are preferred habitat (Zeiner et al, 1990b). The species feeds on insects, such as cicadas, moths, and beetles. Coastal populations have disappeared, and desert populations have declined in numbers largely as a result of disturbance and lack of roosting habitat.

The 1990 survey for bat species in the Project site detected a population of approximately 60 leaf-nosed bats in an underground adit of the Kaiser Eagle Mountain Mine. The underground adit is apparently used as a day roost, and it is estimated that at least 100 bats of this species use this roost. A pregnant female was also captured, indicating that the site may also be a maternity roost (Brown, 1991). Moth wings and guano at the entrance of the mine suggest that the entrance may be used as a night roost. Night roosts for the species were also located in two metal culverts just west of the main mill site and in a concrete structure built into a hill near the mine entrance. The culverts may also be used as day roosts during certain times of the year (Brown, 1990). Two leaf-nosed bats were also observed exiting the Black Eagle

Mine during winter surveys (Brown, 1990). The species also is expected to forage near access roads and along the rail line. Summer surveys (June 24-26, 1993) identified up to 10 leaf-nosed bats at Kaiser Mine, and none at Black Eagle Mine. Dr. Brown states that the primary importance of the Kaiser Mine is as a winter roost for leaf-nosed bats, since no other winter roosts have been located during air searches over the Orocopia, Chuckwalla, and Coxcomb Mountains (Personal Communication, Kathy Freas/CH2M HILL, with Dr. Brown/ University of California Riverside, August 21, 1995). During January 1996, Dr. Brown (1996) counted 79 individual leaf-nosed bats leaving the Kaiser adit, indicating that the bats have persisted through evidence of truck and foot traffic found within the mine.

Townsend's big-eared bat. Townsend's big-eared bat is a federal Category 2 candidate and a California Species of Special Concern that was once considered common in all habitats in California except alpine and subalpine areas. Townsend's big-eared bats feed primarily on moths, and require caves, mines, tunnels and buildings for roost sites. Maternity roosts are usually located in warm sites, while hibernacula are cold, but not below freezing (Zeiner et al, 1990b). Declines are attributable to loss of undisturbed roosting and maternity sites, as the species frequently abandons roosts if they are disturbed by human activity.

Guano characteristic of a maternity roost of this species was observed in an Eagle Mountain underground adit during 1990 surveys of the Project site (Brown, 1990). Subsequent surveys have not identified this species, possibly indicating that the roost has been abandoned. If the species is present, it is likely to forage in nearby areas, including near access roads and the rail line, in areas closer to the mine.

Pallid bat. The pallid bat is a California Species of Special Concern that occurs in a variety of open, dry habitats with rocky outcrops, cliffs, and crevices for roosting.

A male pallid bat was captured in a mist net set over a mine pit pond during 1990 surveys of the Project site and guano of this species was found in two adits west of the Project site (Brown, 1991). The species likely forages in areas near the access roads and rail line, and is known to forage over the pond, which forms from standing water after a rainfall in the bottom of the East Pit of the existing mine, and subsequently infiltrates into the ground.

California mastiff bat. The California mastiff bat is a Category 2 candidate and a California Species of Special Concern that inhabits a variety of arid to semi-arid, open habitats, including desert scrub. They feed on insects, and roost in deep rock crevices with vertical faces, high buildings, trees and tunnels (Zeiner et al, 1990b).

No California mastiff bats were identified in the 1990 survey of the Project site, but suitable habitat is present, and the species is listed as one that could occur at the Project site (Brown, 1990). The entire Project area is within the range of the species.

American badger. The American badger is a California Species of Special Concern that occupies dry, open habitats throughout the state. It requires friable soils for burrowing, and feeds on burrowing rodents. This animal breeds during the summer and early fall months.

Declines in the species are attributable to increased urban and agricultural development and predator control measures.

Sign of badgers were identified during 1995 surveys at the Project site and near Kaiser Road. The species likely also occurs along the rail line in suitable habitat.

Nelson's bighorn sheep. Nelson's bighorn sheep is a California Special Animal. Bighorn sheep feed on green, succulent grasses and forbs as well as browse (shrubs). These animals prefer areas of low shrubs or other low vegetation for feeding, with access to steep, rocky slopes for escape, cover, lambing, and bedding. Water is required. Lambing takes place on steep, rugged slopes and canyons, between mid-April and June. Travel routes between feeding, bedding, lambing, and watering areas are also critical (Zeiner et al, 1990b).

The NPS, NBS, CDFG, MRC, and the University of Nevada-Las Vegas (UNLV) have jointly cooperated to monitor Nelson's bighorn sheep in the region. The most recent survey information will be published in early 1996. (Personal Communication, Kathy Freas/CH2M HILL, with C. Douglas, January 30, 1996). Nelson's bighorn sheep populations (shown in Figure 3.7-6) are known to occur from the Eagle, Coxcomb, and Chuckwalla Mountains, the northwest parts of the Chocolate Mountains, and Mecca Hills, south of Box Canyon (CDFG, 1994). Estimates for these populations indicate 50 individuals in the Eagle Mountains, 50 in the Orocopia Mountains, 35 to 40 in the Chuckwalla Mountains, and 100 in the Chocolate Mountains (BLM and County of Riverside, 1992). Specific estimates are not available for the Coxcombs, but the populations are believed to be fewer than 20 (Personal Communication, Kathy Freas/CH2M HILL, with C. Douglas, January 31, 1996). The continuing monitoring program includes telemetry monitoring of 28 animals, ground surveys, water source surveys, weather station installation to assess the effects of precipitation and temperature fluctuations on the population, disease testing, and genetic analyses.

Bighorn scat was detected during 1989-90 and 1995 surveys at the Project site. Bighorn sheep were also detected during surveys for the previous EIS/EIR at several locations along the Eagle Mountain Railroad. The likelihood of occurrence along access roads is considered low based on preliminary telemetry studies, as well as the distance from steep terrain needed for cover and escape from predators.

3.7.4 Biodiversity and Ecosystem Function

Biodiversity is the concept that all components of ecological systems, both living and nonliving, are interconnected in a hierarchical continuum, and that changes in the diversity at any level in that hierarchy can have effects at other levels (CEQ, 1993). This hierarchy includes both regional and local ecosystem components.

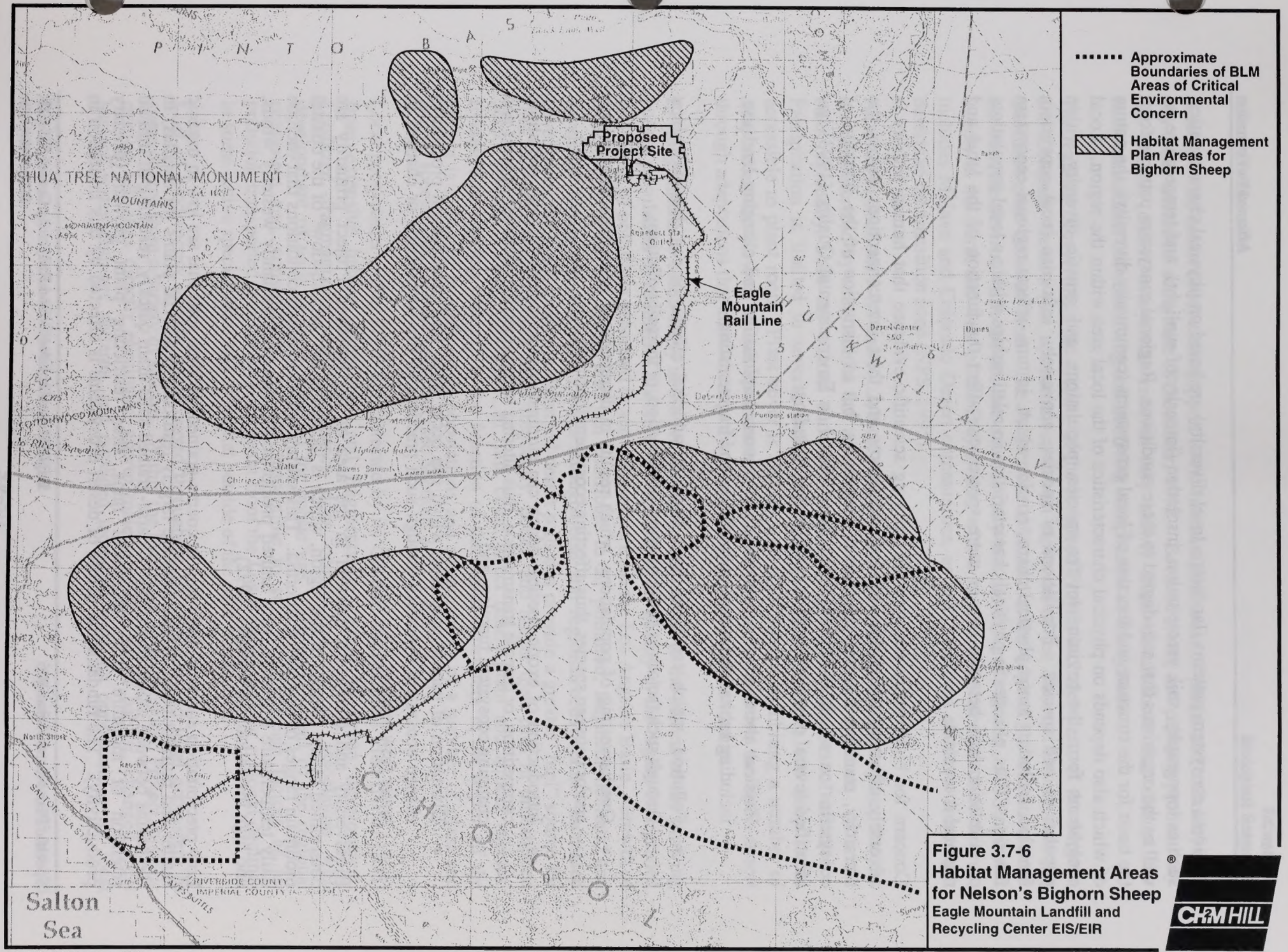


Figure 3.7-6
Habitat Management Areas for Nelson's Bighorn Sheep
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 saleag 6/96

Regional ecosystem patterns (landscape level diversity) are based on physical characteristics, such as topography, soil, precipitation, insolation (intensity of sunlight), and temperature, as well as the organisms that are adapted to these conditions. Regional ecosystem patterns form the basis for the structure and function of local ecosystems (community diversity), the nature of which also depends on physical characteristics of the local area within the region. Local ecosystems form the environment for species, populations, and genetic diversity within populations and species. Populations of species, conversely, influence local ecosystem function, including some physical characteristics which, in turn, affects regional ecosystem function. Thus, changes in physical characteristics, in relationships within a local population, or in relationships between two or more species can affect the function of the local and regional ecosystem.

Concern for biodiversity accompanies growing scientific evidence that human activity is adversely affecting the components of ecosystems and their interconnections across the hierarchy, resulting not only in species extinctions, but in disruption of the function of ecosystems on which all life depends. The Council on Environmental Quality (1993) has identified several primary threats to biodiversity, including:

- Physical alteration of ecosystems from resource exploitation and changing land use, including habitat destruction, degradation, and fragmentation;
- Pollution, which can have direct lethal or sublethal effects, or can degrade habitat through such factors as eutrophication, acidification, or thermal pollution;
- Overharvesting of populations, which results in disruption of interconnections within and/or between species, thus affecting ecosystem function;
- Introduction of exotic species, which can eliminate native species through predation, competition, or disease transmission, thus altering interconnections between species and changing ecosystem function; and
- Disruption of natural processes, which can occur when land management procedures change ecosystem dynamics through such practices as fire suppression or changes in water flow regimes.

Biodiversity and ecosystem function in the area of the proposed Project primarily are determined by the climate of the region, which is located in the "rain shadow" of the coastal mountain ranges of southern California. This setting results in desert conditions that include daily temperature extremes, very limited precipitation, high predominantly westerly winds, and high insolation (Schoenherr, 1992).

Low precipitation and humidity result in coarse-grained, alkaline soils that are low in organic matter and nutrient poor. These soils are largely restricted to alluvial plains (or bajadas) in the basins between mountain ranges. Coarse-grained soils drain quickly, resulting in limited retention of moisture from infrequent rains, thus restricting plant growth (primary productivity). The fundamental nature of desert ecosystems is affected by this limitation in

plant growth; desert ecosystems support lower biomass (the mass of plants and animals) than any other terrestrial ecosystem (Schoenherr, 1992). Because water and primary productivity are limited, desert ecosystems recover very slowly from disturbances that disrupt the interconnections between living and nonliving components of the system.

The regional ecosystem in the vicinity of the proposed Project includes parts of the Mojave and Colorado Deserts (the northernmost, lowest elevation of the Sonoran Desert) and the transition zone between them. The Project site is located at the edge of the transition zone between the deserts, while the rail line extends fully into the Colorado Desert. JTNP, located largely to the north and west of the Project site, with a small area located south of the site, includes Mojave and Colorado Desert communities, as well as mixed elements from both deserts in the transition zone (NPS, 1995).

As noted in Sections 3.7.1 and 3.7.2, local ecosystems in the vicinity of the proposed Project are characterized by communities that are adapted to localized soil and moisture. As is the case regionally, soils are coarse, and nutrient poor with varying degrees of alkalinity. Precipitation is limited to several inches per year, and groundwater is too deep to be accessible to plant roots. Plant cover is sparse, with plant species exhibiting a number of adaptations for survival in this environment. Animal species also survive the harsh desert through adaptations that allow them to avoid or endure environmental extremes.

Existing threats to biodiversity in the Project region are related to the effects of the growing human population in southern California. For example, air quality in the region is degraded as a result of pollutants generated in and transported from the Los Angeles Basin. Growth of local desert cities and towns also can contribute to air pollution, fragment habitats, and accelerate the spread of exotic species through local and regional ecosystems. Increased cover by exotic plant species in disturbed desert soils can provide a greater "fuel" source for fires, allowing them to burn more frequently, hotter, and longer than fires in undisturbed desert systems. These conditions, in turn, could affect desert plant and animal species. Evidence of ongoing changes in the function of the desert ecosystem in the region of the Project is indicated by declines in populations and sustainability of a number of plant and animal species that are desert adapted (see Sections 3.7.1.1 and 3.7.2.1).

Local ecosystems within JTNP are protected by its General Management Plan (NPS, 1995) from extensive habitat degradation and fragmentation caused by urban development. Localized fragmentation and disturbance does occur, however, in association with development of park facilities provided for public use. The park is part of the regional ecosystem and, consequently, may be susceptible to such regional-scale factors as air pollution transported into the local air basin from the Los Angeles area, or regional declines in some native species from loss of habitat outside of the park boundaries.

Loss of biodiversity already has occurred throughout the regional and local ecosystem to some degree from a variety of sources. Within the local area of the proposed Project, historic mining activities directly eliminated approximately 5,500 acres of habitat, changed local surface water drainage patterns, and provided increased watering opportunities for local

wildlife, changing the function of the area at and immediately surrounding the mine and nearby residential communities. Activities associated with mine operation, including the development of the Townsite, introduced exotic plant and animal species to the local ecosystem, and fragmented habitat with roads and development along them and the rail line. Additionally, development of the Colorado River Aqueduct, which runs just east of the Project site, also fragmented habitats and disrupted movement patterns for a variety of terrestrial vertebrates, while providing an additional surface water source to some species.

3.8 Growth Inducement and Socioeconomics

This section presents the existing conditions for growth inducement and socioeconomics. The affected environment for growth inducement and socioeconomics includes the current locations, distributions, densities, and growth rates of population, income, and employment characteristics at the Townsite and the surrounding communities of Desert Center and Lake Tamarisk in comparison to Riverside County as a whole. The Townsite is an established, but underutilized, community located immediately south of the former Eagle Mountain Mine, approximately 11 miles north of the community of Desert Center. This Townsite, originally developed by Kaiser as housing for mine workers and their families, lies within the County's Chuckwalla Land Use Planning Area. Kaiser continues to maintain the infrastructure at the Townsite in support of the Kaiser Eagle Mountain, Inc. office and the community correctional facility. As discussed in Section 2 and in Section 3.5, Land Use, the Townsite will be renovated according to a newly developed Townsite Specific Plan, in anticipation of repopulation of the Townsite.

3.8.1 Riverside County

3.8.1.1 Population

According to 1990 U.S. Census Bureau data, the County of Riverside reported a total population of 1,170,413 persons, the majority of whom (approximately 86 percent) live within or adjacent to urbanized areas. Population data for the County is provided in Table 3.8-1.

Table 3.8-1
Riverside County Population Data
(1990)

Persons	
Urban	1,010,755
Rural	159,658
Total	**1,170,413**
Families	298,517
Households	402,426

Source: U.S. Census Bureau (1990)

3.8.1.2 Employment and Income

According to 1990 U.S. Census Bureau data, the County of Riverside reported workforce composition by industry, occupation, and worker class for employed persons 16 years and over as shown in Table 3.8-2.

Table 3.8-2
Riverside County Employment Data
Employed Persons 16 Years and Older
(1990)

Industry		Occupation		Class of Worker	
Agriculture, Forestry	21,463	Executive, Managerial, Administrative	56,732	Private Wage and Salary (Profit)	354,745
Mining	981	Professional Specialty	55,646	Private Wage and Salary (Nonprofit)	20,766
Construction	53,281	Technical	15,127	Local Government	40,705
Manufacturing	71,730	Sales	62,315	State Government	15,123
Transportation	18,079	Admin. Support	73,474	Federal Government	11,509
Communications, Utilities	12,599	Service - Household	2,156	Self-employed	43,384
Wholesale, Retail Trade	105,089	Service - Protective	10,002	Unpaid Family Workers	2,025
Finance, Insurance, Real Estate	32,632	Service - Other	53,023		
Business and Repair Services	26,498	Farming, Forestry	20,496		
Personal Services	20,046	Production, Repair	70,492		
Entertainment, Recreation	10,423	Machine Operators, Assemblers	26,075		
Professional Services	94,508	Transportation, Material Handling	21,576		
Public Administration	20,928	Laborers	21,143		

Source: U.S. Census Bureau (1990)

Median household income reported for 1989 was $33,081; median family income reported was $37,694; and per capita income was reported as $14,510. Approximately 26 percent of the total County households surveyed reported no wage or salary income, whereas approximately 9 percent of the households surveyed were reported to be on public assistance income. Poverty status data for the County of Riverside for 1989 is shown in Table 3.8-3.

Table 3.8-3
Riverside County Poverty Status Data
Persons for Whom Poverty Status is Determined (1989)

Persons Above Poverty Level		Persons Below Poverty Level	
White	797,694	White	80,698
Black	47,478	Black	11,377
American Indian, Eskimo, Aleut	9,614	American Indian, Eskimo, Aleut	1,765
Asian/Pacific Islander	34,089	Asian/Pacific Islander	6,465
Other	123,420	Other	31,385
Total	**1,012,295**	**Total**	**131,690**

Source: U.S. Census Bureau (1990)
Note: Race, as used by the Census Bureau, is not meant to denote any scientific or biological component of race. The subgroups displayed in this table represent the self-categorization of respondents (i.e., individuals identifying themselves as Hispanic could also be included under other ethnic classifications; therefore, the percentages could exceed 100 for a geographical area).

3.8.2 Regional Setting

3.8.2.1 Population

Chuckwalla Subdivision. The proposed Project site lies within the Chuckwalla Subdivision area in the eastern part of the County of Riverside. (A subdivision, used in this context, is a geographical delineation system used by the Census Bureau.) The Chuckwalla Subdivision, which is shown in Figure 3.8-1, comprises primarily a sparsely developed and populated rural desert area. According to 1990 U.S. Census Bureau data, the Chuckwalla Subdivision reported a total population of 4,579 persons, all of whom are considered to live outside the urbanized areas that are concentrated in the western part of the County. Population data for the Chuckwalla Subdivision of the County are provided in Table 3.8-4.

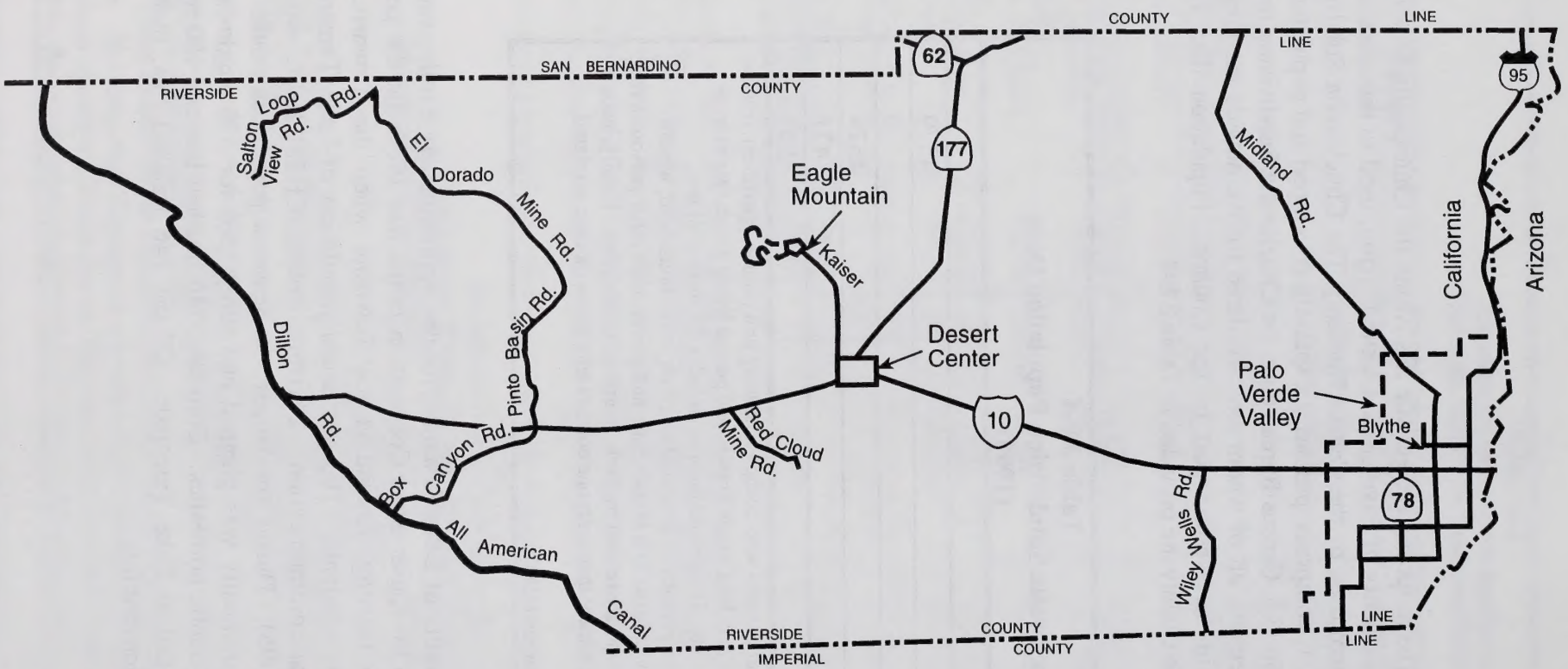
Table 3.8-4
Chuckwalla Subdivision Population Data
(1990)

Persons	
Total	4579
Urban	0
Rural	4579
Families	471
Households	592

A household includes all persons who occupy a housing unit (house, apartment, mobile home, etc.). Occupants may be a single family, one person living alone, two or more families living together, etc. Household income includes the income of the householder and all other persons 15 years old and over in the household, whether related or not. A family consists of a householder and one or more other persons living in the same household who are related by birth, marriage, or adoption. Family income is similar to household, except that everyone contributing to the income is related.

Source: U.S. Census Bureau (1990)

Lake Tamarisk. The community of Lake Tamarisk, located approximately 8 miles south of the Townsite, was developed by Kaiser Steel Corporation in the late 1960s (at the peak of mining activity) to alleviate housing demand at the Townsite when the Townsite had approximately 3,700 full-time residents. The permanent population of Lake Tamarisk is presently about 200 (Personal communication. Christine Roberts/CH2M HILL, with Jan Roberts/Kaiser, December 1995). During the winter, the seasonal population could be as high as 500 people. This community was planned and subdivided for 350 single-family, detached homesites and 150 mobile homesites. Currently, 146 finished lots and 150 mobile homesites have been developed at Lake Tamarisk. Of the 146 finished lots, there are currently 68 homes and 78 improved lots.



Source: Riverside County Comprehensive General Plan, 1992.

Figure 3.8-1
Chuckwalla Land Use Planning Area
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

Desert Center. Desert Center is located approximately 11 miles south of the Townsite at the intersection of Interstate 10 and Highway 177. According to 1990 Riverside County census data, Desert Center reported a total population of 280 persons.

Townsite. The Townsite is located approximately 11 miles north of Desert Center at the terminus of Kaiser Road. The Townsite, which is located directly south of the Eagle Mountain Mine site on approximately 429 acres, consists of a network of residential and commercial buildings and infrastructure. Approximately 220 persons currently reside in the Townsite, the majority of whom are employees of Kaiser or the community correctional facility. Many of the existing unoccupied structures are in a state of disrepair from disuse, and Kaiser is assessing the existing housing stock and implementing a preservation program for all homes within the Townsite. Kaiser intends to renovate the existing housing and infrastructure within the Townsite to accommodate the housing and service needs of landfill employees and their families. The Townsite is discussed in detail in Section 2 and Section 3.5, Land Use, of this environmental impact statement/environmental impact report (EIS/EIR).

3.8.2.2 Employment and Income

Chuckwalla Subdivision. According to 1990 U.S. Census Bureau data, the Chuckwalla Subdivision of the County of Riverside reported workforce composition by industry, occupation, and worker class for employed persons 16 years and over. These data are shown in Table 3.8-5.

Table 3.8-5
Chuckwalla Subdivision Employment Data
Employed Persons 16 Years and Over
(1990)

Industry		Occupation		Class of Worker	
Agriculture, Forestry	49	Executive, Managerial, Administrative	48	Private Wage and Salary (Profit)	249
Mining	26	Professional Specialty	45	Private Wage and Salary (Nonprofit)	37
Construction	32	Technical	0	Local Government	68
Manufacturing	25	Sales	58	State Government	109
Transportation	14	Admin. Support	58	Federal Government	30
Communications, Utilities	18	Service - Household	0	Self-employed	50
Wholesale, Retail Trade	106	Service - Protective	116	Unpaid Family Workers	0
Finance, Insurance, Real Estate	26	Service - Other	94		
Business and Repair Services	0	Farming, Forestry	41		
Personal Services	20	Production, Repair	31		
Entertainment, Recreation	30	Machine Operators, Assemblers	0		
Professional Services	75	Transportation, Material Handling	39		
Public Administration	122	Laborers	13		

Source: U.S. Census Bureau (1990)

Median household income reported for 1989 was $21,290; median family income reported was $25,347; and per capita income was reported as $15,666. Approximately 37 percent of the total Chuckwalla Subdivision households surveyed reported no wage or salary income, while approximately 14 percent of the households surveyed were reported to be on public assistance income. Poverty status for 1989 for the Chuckwalla Subdivision is shown in Table 3.8-6.

Table 3.8-6
Chuckwalla Subdivision Poverty Status Data
Persons for Whom Poverty Status is Determined (1989)

Persons Above Poverty Level		Persons Below Poverty Level	
White	1,153	White	270
Black	0	Black	61
American Indian, Eskimo, Aleut	9	American Indian, Eskimo, Aleut	0
Asian/Pacific Islander	0	Asian/Pacific Islander	0
Other	63	Other	273
Total	**1,216**	**Total**	**604**

Source: U.S. Census Bureau (1990)

Lake Tamarisk. The primary employer at Lake Tamarisk is the County, which employs approximately seven people to run and operate the golf course and its associated pro shop and recreation center.

Desert Center. The primary commercial employers at Desert Center are a post office; one gas station; three mini-markets; two cafes; a drive-up, fast-food restaurant; and two bars. Approximately 36 people are employed at these businesses.

Townsite. The primary commercial/institutional employers at the Townsite include:

- Kaiser Administrative Offices: administrative offices for oversight of mining-related activities and Townsite facilities and infrastructure (6 employees)
- Mine Reclamation Corporation (MRC): site office for maintaining site and community relations (1 employee)
- Eagle Mountain Community Correctional Facility: a privately-managed community correctional facility that operates under a contract arrangement with the California Department of Corrections (90 employees)
- Eagle Mountain School: conducts classes for approximately 100 kindergarten through eighth grade students (12 employees)
- Riverside County Fire Station 80: operates from a location adjacent to the correctional facility in the western portion of the Townsite (2 employees)

- Self-Service Laundry: former service station used as an independent self-service laundry on property (1 employee)
- General Telephone Company switching facility (0 employees—the facility is self-operating)

3.9 Geology and Mineral Resources

This section establishes the existing geologic conditions, including general seismicity and mineral resources. The local and regional geologic setting of the proposed Project site was extensively investigated during and subsequent to the submittal of the previous EIS/EIR. Additional technical reports have been prepared to assess the geologic and mineral resources of the general vicinity of the Project in support of the applicant's application for waste discharge requirements in 1992. These technical reports are included in the ROWD (GeoSyntec, 1992). A list of the technical reports included in the ROWD is included in Table 3.9-1 and Section 9, References. The geologic information from the technical reports listed in Table 3.9-1 is summarized in this section. (The technical reports in this table are also pertinent to the groundwater discussion in Sections 3.1 and 4.1.)

The ROWD comprises a total of 10 volumes (ROWD Volumes 1 through 8 and Supplemental Volumes 1 and 2), including sections that address comments from the RWQCB and others (see Table 3.9-1). It contains comprehensive and complete geologic data pertaining to the Project site. The main issues addressed in the supplemental volumes are hydrogeology and seismicity. The extensive investigation of the seismicity of the site included evaluation of microseismicity and fault activity; peak ground acceleration assessment of probabilistic seismic hazard; and analysis of seismic displacement analysis. The geologic work conducted for the supplemental seismicity investigations is summarized in this section. The site hydrogeology is discussed in Section 3.1, Groundwater Use and Quality.

In addition to the reports listed in Table 3.9-1, several reports summarizing geologic, seismic, and groundwater studies included in the ROWD are provided as appendices to this EIS/EIR. In addition, two technical reports from the ROWD are included in appendices to this EIS/EIR. The summary reports and technical reports are included in Appendices C and H, and are referenced in this section and in Section 4.9.

The report in Appendix C is:

- Groundwater Investigation and Monitoring Summary Report, Eagle Mountain Landfill and Recycling Center, Riverside County, California (GeoSyntec Consultants, 1996)

The reports in Appendix H are:

- H-1: Seismic Information Summary Report, Final Report, Eagle Mountain Landfill and Recycling Center, Riverside County, California (GeoSyntec Consultants, 1996)

- H-2: Assessment of Landfill Performance in Recent Earthquakes, Final Report, Eagle Mountain Landfill and Recycling Center, Riverside County, California (GeoSyntec Consultants, 1996)

Table 3.9-1
Report of Waste Discharge
Geologic Reports Addressing Conditions in the Vicinity of the Proposed Project

ROWD Volume	ROWD Appendix	Report Date	Report Author	Report Title
1	N/A	12/92	GeoSyntec Consultants	Report of Waste Discharge
4	C-3	8/16/92	GSi/Water	Brief Description of Geology to Accompany the Geologic Map
	C-4	7/30/91	GSi/Water	Detailed Fracture Mapping of the Proposed Landfill Site
	C-5	6/5/91	GSi/Water	Fracture Mapping Outside the East Pit
	C-6	5/30/91	GSi/Water	Fracture Mapping in the East Pit
	C-7	6/16/92	GSi/Water	Detailed Fracture Analysis of Monitoring Wells 7, 8, and 9
	C-8	6/16/92	GSi/Water	Detailed Fracture Analysis of Piezometers, Piezometers 1-10 and 13, and Monitoring Wells 11, 12, and 13
	C-9	2/15/91	GSi/Water	Nature of the Alluvium
5	D-1	11/92	R. J. Proctor	Faults and Microseismicity Investigations and Conclusions Proposed Eagle Mountain Landfill Site, Riverside County, CA
	D-2	11/92	Roy J. Shlemon, Ph.D.	Final Report, Geomorphic and Soil Stratigraphic Age Assessments, Alluvial Deposits, Proposed Eagle Mountain Landfill Site, Riverside, CA
	D-3	10/26/92	Geoffrey R. Martin, Ph.D.	Eagle Mountain Landfill Project Probabilistic Seismic Hazard Analyses
	D-3	10/26/92	Bruce A. Schell	Seismotectonic Evaluation of the Proposed Eagle Mountain Landfill Region, Southern California
	D-3	10/10/92	Earth Mechanics, Inc.	Probabilistic Seismic-Hazard Assessment Eagle Mountain Landfill
	E-5	2/15/91	GSi/Water	Results of the Detailed Gravimetric Investigation
	E-6	4/10/91	GSi/Water	Ground Temperature Survey
	E-7	8/17/92	GSi/Water	Monitoring Well and Corehole Drilling Program Results of Drilling, and Construction of Monitoring Wells 8, 10, 11, 12, and 13; and Results of Drilling of Coreholes 2, 3, 3A, 4, 5, 5A, 10, 11, and 12
	E-8	8/17/92	GSi/Water	Results of Piezometer Drilling Program
	E-9	12/10/92	GSi/Water	P-14, P-15, and P-16 Drilling Report
6	E-11	9/10/92	GSi/Water	Results of Packer Testing in Coreholes 2, 3A, 5A, 11, and 12
	E-12	3/25/91	GSi/Water	Interpretation of Temperature Logs of Monitoring Wells
	E-13	12/10/92	GSi/Water	Report on Test Pumping in the Vicinity of the Bald Eagle Canyon Fault
	E-14	2/10/92	GSi/Water	The Occurrences and Nature of Ground Water Interim Report—Appendix B: Aquifer Characteristics
8	K-1	10/92	GeoSyntec Consultants	Rock Slope Stability
	K-2	10/92	GeoSyntec Consultants	Liner Side Slope Stability
	K-3		GeoSyntec Consultants	Haul Road Stability
	K-4		GeoSyntec Consultants	Waste Slope Stability

Table 3.9-1
Report of Waste Discharge
Geologic Reports Addressing Conditions in the Vicinity of the Proposed Project (Cont.)

ROWD Volume	ROWD Appendix	Report Date	Report Author	Report Title
Supplemental Volume No. 1, Sections 13, 14, 15, 16	N/A	6/9/93	GeoSyntec Consultants	Report of Waste Discharge Supplemental Volume 1 (including responses to California Associate Geologist William A. Bryant's comments)
Supplemental Volume No. 1	X	5/93	R.J. Proctor	(Updated May 1993)
	Y	5/93	R.J. Shlemon, Ph.D.	Geomorphic and Soil Stratigraphic Age Assessments
Supplemental Volume No. 2A Sections 16, 17, 18, 19, and 20	N/A	10/93	GeoSyntec Consultants	Report of Waste Discharge Supplemental Volume 2A
Supplemental Volume No. 2A	Z	10/93	GeoSyntec Consultants	The Relationship of Fracture Density to Lithology as Logged from Selected Rock Cores
	AA	10/93	GeoSyntec Consultants	Average Fracture Aperture Widths and Calculated Hydraulic Conductivities from Detailed Fracture Analyses
	BB	10/27/93	GSi/Water	Detailed Fracture Analysis of Piezometers 17, 20, and 21
	CC	7/6/93	GSi/Water	Results of Drilling and Construction and Well Deviation Surveys for Piezometer
Supplemental Volume No. 2A	DD	11/93	GSi/Water	Results of Drilling and Construction, Borehole Geophysical Logs, and Well Deviation Surveys for Piezometer Nos. P-20 through P-24 and Well Deviation Surveys for Monitoring Wells MW-7 and MW-11
	EE	11/29/93	GSi/Water	Geohydrologic Interpretation of Temperature Logs for Piezometer Nos. P-17, P-18, P-19, P-20, P-21, P-22, P-23, and P-24
Supplemental Volume No. 2B	FF	10/93	Groundwater Associates, Inc.	Results of Pumping Tests in Phase 1 and Phase 2 Areas and in Bald Eagle Canyon Fault Zone (in preparation)
	GG	12/93	GeoSyntec Consultants	Stiff Diagrams for Monitoring Wells MW-1, MW-2, MW-3, MW-5, MW-6, MW-7, and MW-10 through MW-13

- H-3: Faults and Micro-Seismicity Investigations and Conclusions, Proposed Eagle Mountain Landfill Site, Riverside County, California (Proctor, Richard J., May 1993)

- H-4: Summary of the Information on Absence of Holocene Faulting, Eagle Mountain Landfill and Recycling Center, Riverside County, California (GeoSyntec Consultants, 1996)

- H-5: Updated Report, Geomorphic and Soil-Stratigraphic Age Assessments, Alluvial Deposits, Proposed Eagle Mountain Landfill Site, Riverside County, California (Shlemon, Roy J., May 1993)

The geologic work performed at the site of the proposed Project includes:

- Installation of 52 groundwater observation wells and piezometers
- Installation of 39 single wall straddle-packer down-hole pump tests
- Two multiple well pump tests
- Continuous coring of seven holes (6,900 feet)
- Down-hole video logging to examine subsurface rock in detail
- Fracture analysis from corings and results of video logging
- Geologic field mapping
- Trench-logging
- Photo analysis
- Geomorphic and soil stratigraphic age dating
- Potassium-argon age dating
- Observations of the patterns of microseismicity in the Project vicinity
- Observation of the pattern of Holocene faulting in Southern California
- 3-D rock slope stability
- 2-D limit equilibrium stability
- 2-D and 3-D slope deformation analysis for earthquake loading
- 2-D seismic response analyses for earthquake loading

3.9.1 Soil and Geologic Conditions

The soil and geologic conditions of the Project site are summarized in this section, including a general description of the geologic setting earth materials (i.e., bedrock and unconsolidated deposits), and the geologic structure. The geologic study of the Project site includes evaluation of surface soils and subsurface bedrock. The soils consist of colluvium (slope wash material) and alluvium (material transported by streams). The bedrock consists of granite and meta-sediments (thermally altered sedimentary bedrock).

3.9.1.1 General Description of Geologic Setting

California is divided into 10 Geologic Provinces that delineate areas of generally similar structure and bedrock type. The Project site is situated at the eastern edge of the Eagle

Mountains, adjacent to the Chuckwalla Valley. The Eagle Mountains extend into the Basin and Range Geologic Province at the eastern extremity of the Southern California Transverse Ranges Geologic Province. In general, the Basin and Range Geologic Province is characterized by Precambrian-era bedrock (greater than 600 million years in age) and a predominantly northwest to southeast trending structure. The Transverse Ranges are underlain by a relatively younger sequence of Mesozoic and Paleozoic bedrock ranging from 60 to 600 million years in age and are characterized by an east-west trending structure. The Eagle Mountains consist of Mesozoic and Paleozoic rocks and are bounded to the north and south by east-west trending faults. The regional geology of the Project site is shown in Figure 3.9-1.

The Project site is underlain by crystalline bedrock (granite and meta sedimentary) and unconsolidated soils (alluvium) that are described in more detail in Section 3.9.1.2, below. Bedrock within the Project site, which is illustrated in Figures 3.9-2(a) and (b) showing the local geologic conditions, is characterized as meta-sedimentary and igneous rocks. Significant iron ore deposits are located within the meta-sedimentary bedrock. Unconsolidated soils (i.e., non-bedrock materials) at the site consist primarily of laterally continuous alluvium (i.e., sand and gravel that are deposited by streams) and minor amounts of colluvium extending south from the Eagle Mountain range front. The alluvium, which extends from the floors of canyons within the landfill footprint in a thickening wedge into the center of the Chuckwalla Valley east and southeast of the site is shown in Figure 3.9-3. Significant deposits of mining by-products consisting of coarse and fine tailings and overburden materials also exist.

Structurally, the meta-sedimentary rocks are part of a large anticline (i.e., concave downward fold) trending generally west-northwesterly. The bedrock is cut by several pre-Holocene (greater than 11,000 years in age) faults trending northwest-southeast. Bedrock discontinuities (i.e., jointing, fractures, and bedding planes) are prominent and extensively interconnected. The bedrock structure is discussed in more detail in Section 3.1.2.1 and Appendix C-4.

3.9.1.2 Earth Materials

Earth materials at the Project site are either hard crystalline bedrock or unconsolidated soils. The crystalline bedrock is predominantly composed of granite and the unconsolidated soils are mostly alluvium. These features are illustrated as a geologic cross-section in Figure 3.9-4.

Bedrock. The crystalline bedrock in the vicinity of the proposed Project is composed of meta-sedimentary rocks (i.e., sediments that are altered by pressure), an igneous unit (i.e., granite), and a series of veins of igneous rocks (dikes) (Appendix C-4). The meta-sedimentary rocks are Paleozoic (approximately 250 million years old) in age and the igneous rocks are Mesozoic (approximately 60 million years old) in age. The meta-sedimentary rocks consist of former sandstone, conglomerate, arkose, and carbonate rocks that were folded, faulted, metamorphosed, and hydrothermally altered to quartzite, meta-arkose, marble, and an

ore zone. Igneous rocks include sills, dikes, and small irregularly shaped plutons of porphyritic quartz monzonite, diorite, monzonite porphyry, granodiorite, and granite. These hard, erosion-resistant rocks underlie the hills and mountains within the Project site.

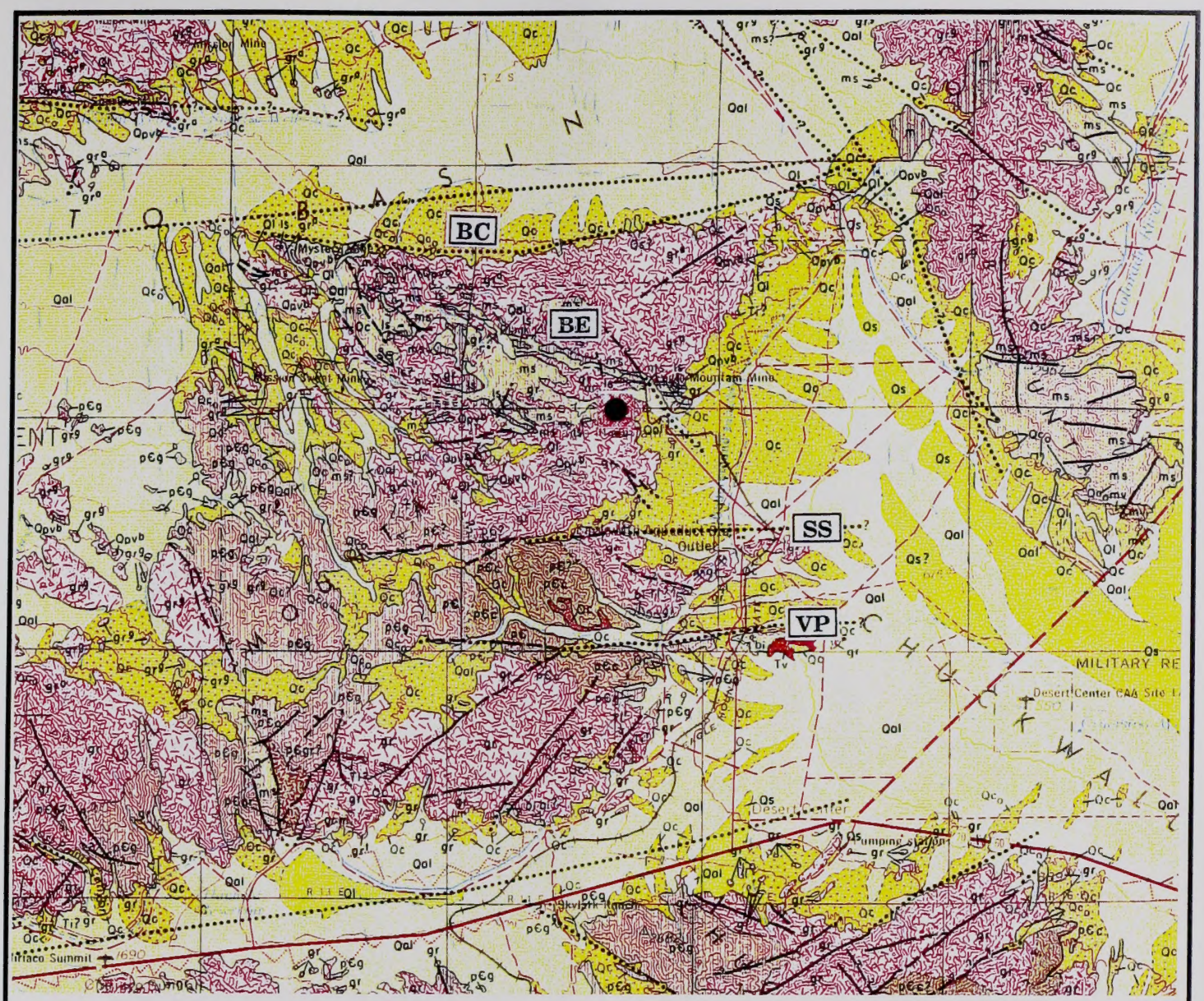
The bedrock has been divided into distinct units for purposes of identification during geologic characterization of the site by various workers at the site. These units are selected based on the type of rock (composition) and age of the rock. From older to younger the lithologic (rock) units that comprise the bedrock in the proposed project area include: Lower Quartzite, 1,000 ft (300 m) or more thick; Schistose Meta-arkose, 20 to 200 ft (6 to 60 m) thick; Lower Marble 20 to 200 ft (6 to 60 m) thick; Middle Quartzite, 150 to 400 ft (45 to 120 m) thick; Upper Marble 50 to 400 ft (15 to 120 m) thick; Upper Quartz, several hundred feet thick; Granitic Rocks; Dikes consisting of mafic (dark) minerals and oriented in a general southwest-northeast direction and andesite dikes trending northeast-southwest; and Ore Body consisting mainly of iron ore formed by hydrothermal replacement of mostly meta-sedimentary rocks between the Lower Quartzite and Upper Quartzite units (Appendix C-4).

Unconsolidated Deposits. Unconsolidated deposits (i.e., soil-like, not rock) in the general area of the proposed Project consist of colluvium and alluvium (primarily in the southeastern portion of the Project site), and mining by-products.

The alluvial deposits were mapped in detail using aerial photographs, low-level aerial reconnaissance photography, and field mapping (Appendix H-1). Four surficial alluvial units are identified and consist of, starting with the oldest:

- Unit I is predominantly flat, elongate cobbles forming an extensive desert pavement
- Unit II consists of sand, gravel, and cobbles with moderately developed desert pavement
- Unit III consists of sand and gravel with little or no desert pavement
- Unit IV consists of sand and gravel located in stream-bed channels with no desert pavement.

The alluvial deposits that cover bedrock on canyon floors within the landfill footprint consist of sandy gravel with cobbles and boulders. These materials range in thickness from zero, in the headward ends of the canyons, to 50 feet at the mouths of the canyons parallel to the modern surface drainage. Detailed field investigation of the alluvial sediments at the site identified old soil profiles (i.e., paleosols) within the alluvial section (Appendix H-5). Several buried paleosols and a relatively well-developed relict paleosol were mapped at the Project site within the alluvium exposed in the mine excavation and exploratory trenches.



Explanation

SEDIMENTARY AND METASEDIMENTARY ROCKS

- Qs — Dune sand
- Qal — Alluvium
- Ql — Quaternary lake deposits
- Qc — Pleistocene nonmarine
- ms — Pre-Cretaceous metamorphic rocks
- ms — Pre-Cretaceous metasedimentary rocks
- pC — Undivided Precambrian metamorphic rocks

IGNEOUS AND META-IGNEOUS ROCKS

- Qpv — Pleistocene volcanic rocks
- Tertiary intrusive rocks
- Tertiary volcanic rocks
- gr — Mesozoic granitic rocks
- pCc — Precambrian igneous and metamorphic rock complex
- pCgr — Undivided Precambrian granitic rocks

- BC — Blue Cut fault
- BE — Bald Eagle Canyon fault
- SS — Substation fault
- VP — Victory Pass fault
- Fault
  solid where known
  dashed where inferred
  dotted where concealed
- Proposed Project site

Source: C.D.M.G. Geologic Map of California Salton Sea Sheet, 1967

N

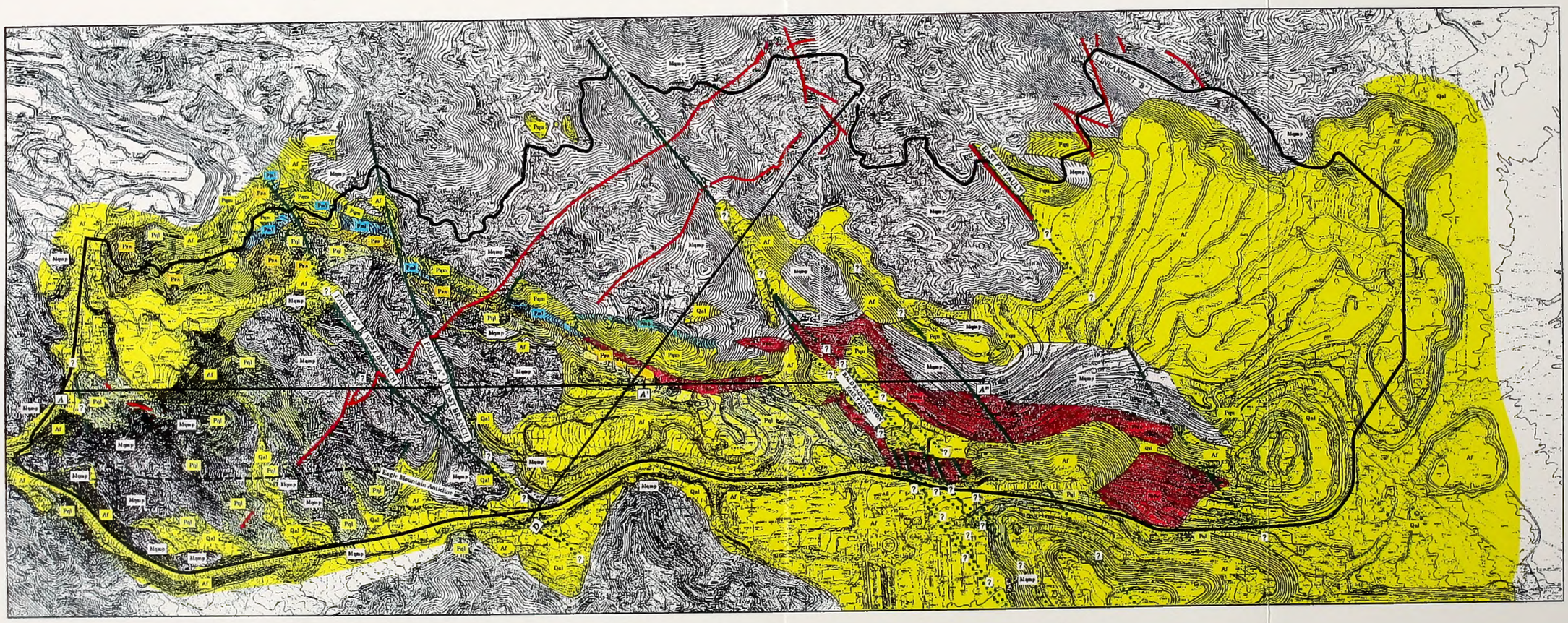
0 5

scale in miles

Figure 3.9-1
Regional Geologic Map
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2MHILL

m115231.T6.20 RGMap



N

0 1600

scale in feet

Source:
GSi/water, South Pasadena, CA 6/93

Figure 3.9-2(a)
Local Geologic Map
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 LGMap

Explanation

UNCONSOLIDATED UNITS

Af — Artificial fill - overburden and tailings

Qal — Alluvium - alluvial sand, silt and gravel. Recent silt and sand of channels and floodplains. Includes debris flow deposits, and Older Alluvium.

IGNEOUS ROCKS

Mqmp — Granitic Rocks - consists of subunits of (1) coarse-grained biotite monzonite (youngest). Typically containing 25 to 35 percent quartz, (2) coarse-grained porphyritic biotite monzonite with abundant quartz and alkali feldspar; (3) medium-grained sphene-biotite-hornblende granodiorite; (4) coarse-grained quartz-poor monzonite; (5) coarse-grained hornblende-biotite quartz-poor porphyritic monzonite (oldest). Some units exhibit gneissic banding.

METAMORPHIC ROCKS

Pqu — Upper Quartzite - fine to very coarse-grained, vitreous, mottled gray and bluish gray quartzite. Medium-bedded to massive with low-angle sets of tangential planar cross-laminations; compositionally mature (95+ percent quartz); with thin beds of meta-arkose; conglomeratic lenses contain pebbles and cobbles of quartzite. Thickness of the unit is several hundred feet.

Pmu — Upper Marble - very coarse-grained, recrystallized dolomite marble with grains up to 1 cm across; white to light-gray on fresh surfaces, grayish orange to buff on weathered surfaces; thin to thick bedded to massive. Thickness of the unit ranges from 50 to 400ft. Iron ore zone has formed as a function of hydro-thermal replacement of host rocks. The metallic mineralization is magnetite and hematite. Gangue minerals associated with the ore are pyrite, actinolite and tremolite.

Pqm — Middle Quartzite - fine to medium-grained vitreous, green-dark gray quartzite. Conglomerate contains pebbles and cobbles of quartz and quartzite in layers and lenses up to 10ft thick interbedded near the base with cross-bedded quartzite; hematite imparts a characteristic rusty-brown stain to weathered rock. Thickness of the unit ranges from 150 to 400ft. Banded varieties due primarily to the presence of diopside.

Pml — Lower Marble - very coarse-grained white marble and ferriferous layers of hematite-dolomite. Thickness of the unit ranges from 20 to 200ft. Iron ore zone abundant minerals are magnetite and hematite. Gangue minerals associated with the ore are mainly pyrite, actinolite, and tremolite, but minor amounts of diopside, serpentine, calcite, gypsum, and garnet are also associated.

Psa — Schistose Meta-Arkose - medium-grained gray arkose with schistose structure; general iron oxide staining throughout the unit has locally produced reddish and purplish browns; high percentage of quartz, feldspar sericite and clay with minor amounts of chlorite, biotite, apatite, and opaques. Thickness of the unit ranges from 20 to 200ft.

Pql — Lower Quartzite - vitreous white to light-gray quartzite; very coarse-grained; massive with bedding obscure or obliterated; compostionally supermature, commonly with 98-99+ percent quartz. Thickness of the unit is 1000ft plus.

PMu — Undifferentiated metasediments and intrusive bedrock; Ore-bearing

Landfill footprint

Geologic contact
dashed where approximate

Fault
dashed where inferred;
dotted where concealed

Dike

Eagle Mountain Anticline

B — B' Geologic cross-section

SOURCES OF GEOLOGIC INFORMATION

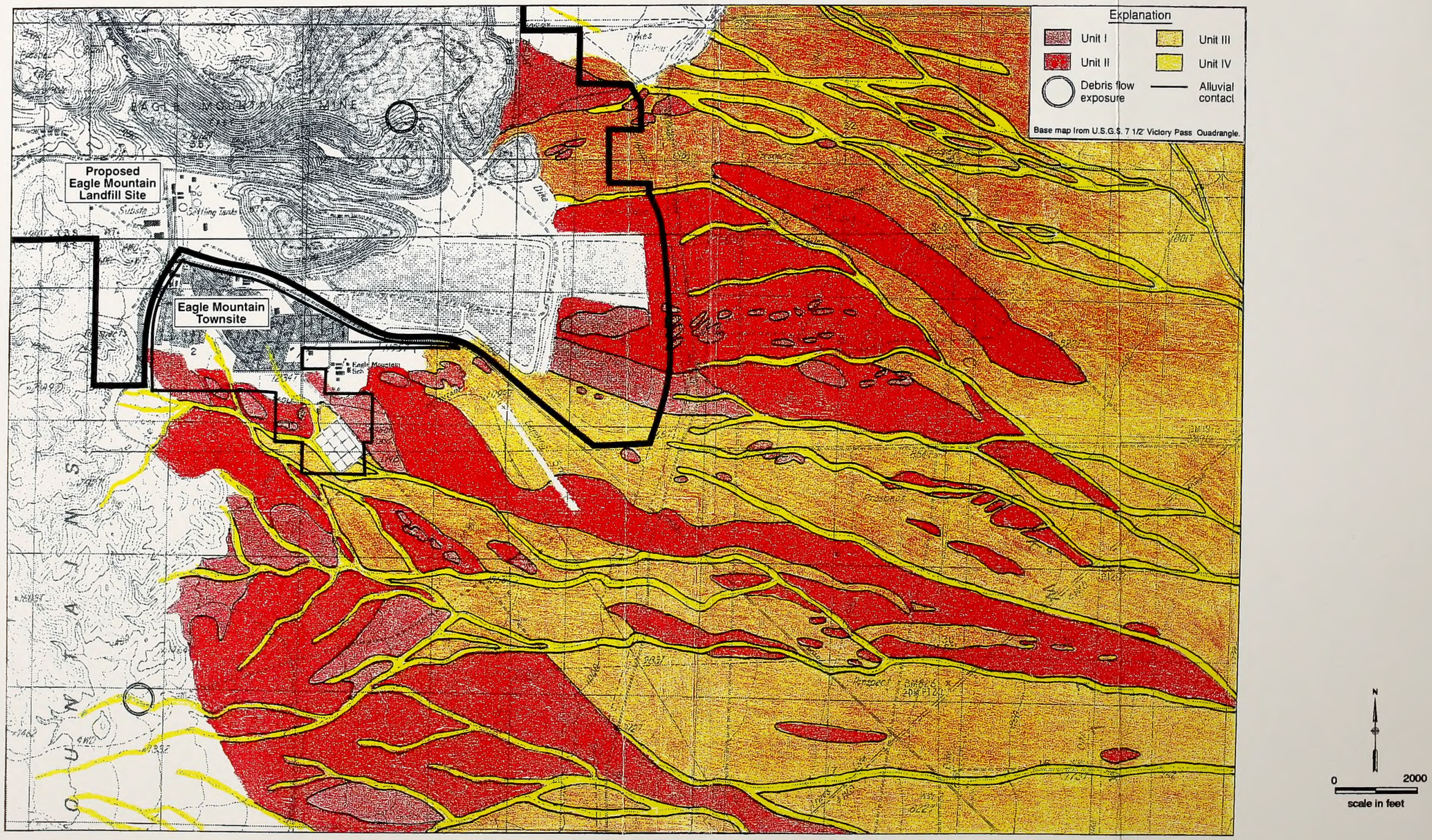
1. GSi/water - geologic mapping and graphics
2. Harder. 1912.
3. DuBois. 1958.
4. Pincock, Allen and Holt, Inc. 1984.
5. C.D.M.G. Bulletin 129. 1948.
6. Kaiser Steel Resources. 1942. 1952.
7. GSi/water. 1990-1993.
8. PRA Group. 1991.
9. Proctor. 1992-1993.

Base map from Cooper Aerial Survey Co.

Source:
GSi/water, South Pasadena, CA 6/93

Figure 3.9-2(b)
Local Geologic Map Legend
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

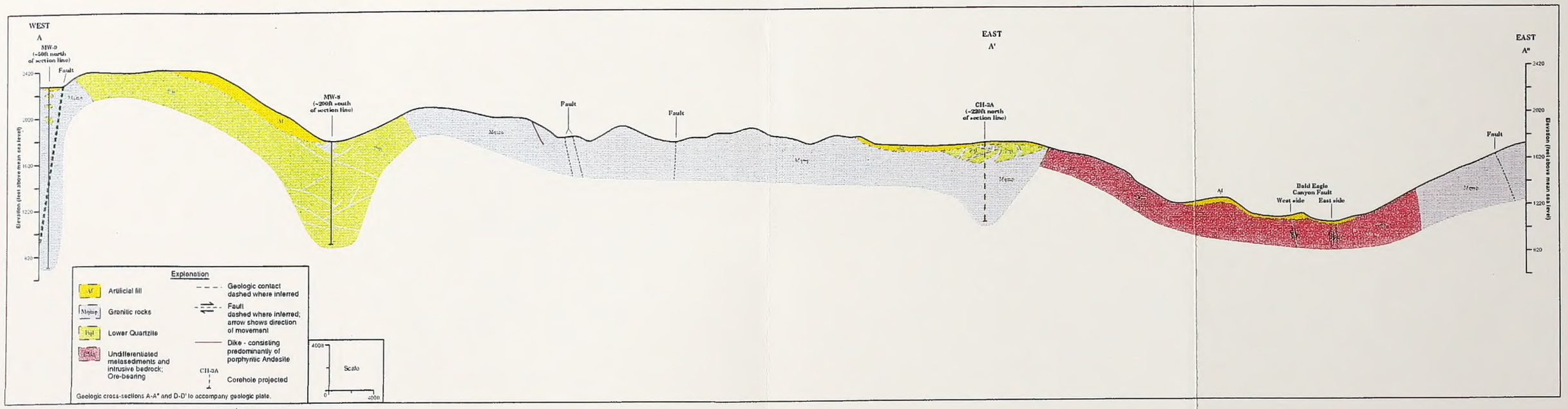


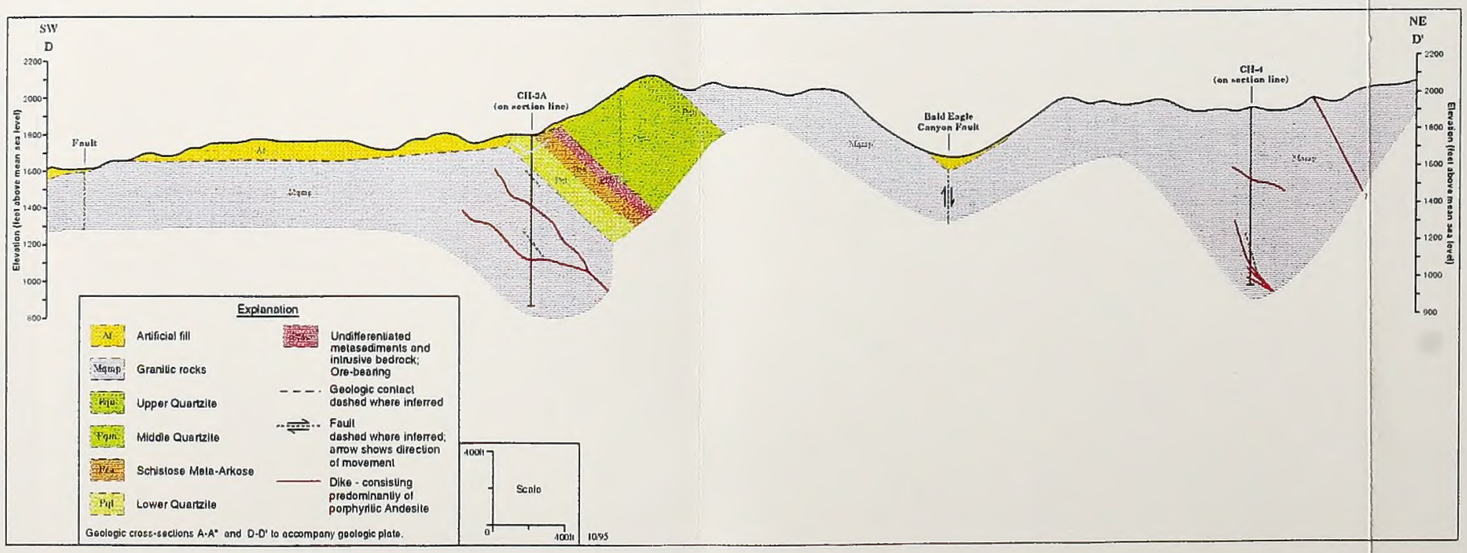
Source:
GSi/water, South Pasadena, CA 6/93

Figure 3.9-3
Alluvium Map
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 alluv





Source:
GSi/water, South Pasadena, CA 6/93

Figure 3.9-4
Geologic Cross Sections
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2MHILL

m115231.T6.20 GeoCSctn

Mining by-product piles and ponds containing tailings and overburden materials generated from former Kaiser mining operations are present at various locations at the site. Overburden (materials encountered during the mining operations that were covering the ore deposits) has been deposited throughout the proposed landfill site in piles and is composed primarily of gravel, cobbles, and boulders. Tailings, which are materials separated from the iron ore during processing, can be differentiated as fine and coarse. Fine tailings consisting of silty sand, sandy silt, clayey silt, and silty clay are located in several former sedimentation ponds southeast of the proposed landfill site. Coarse tailings, consisting of silty sandy gravel, sandy gravel, gravel, and, in some localized areas, cobbles and boulders, are primarily deposited in a large pile south of the East Pit.

3.9.1.3 Geologic Structure

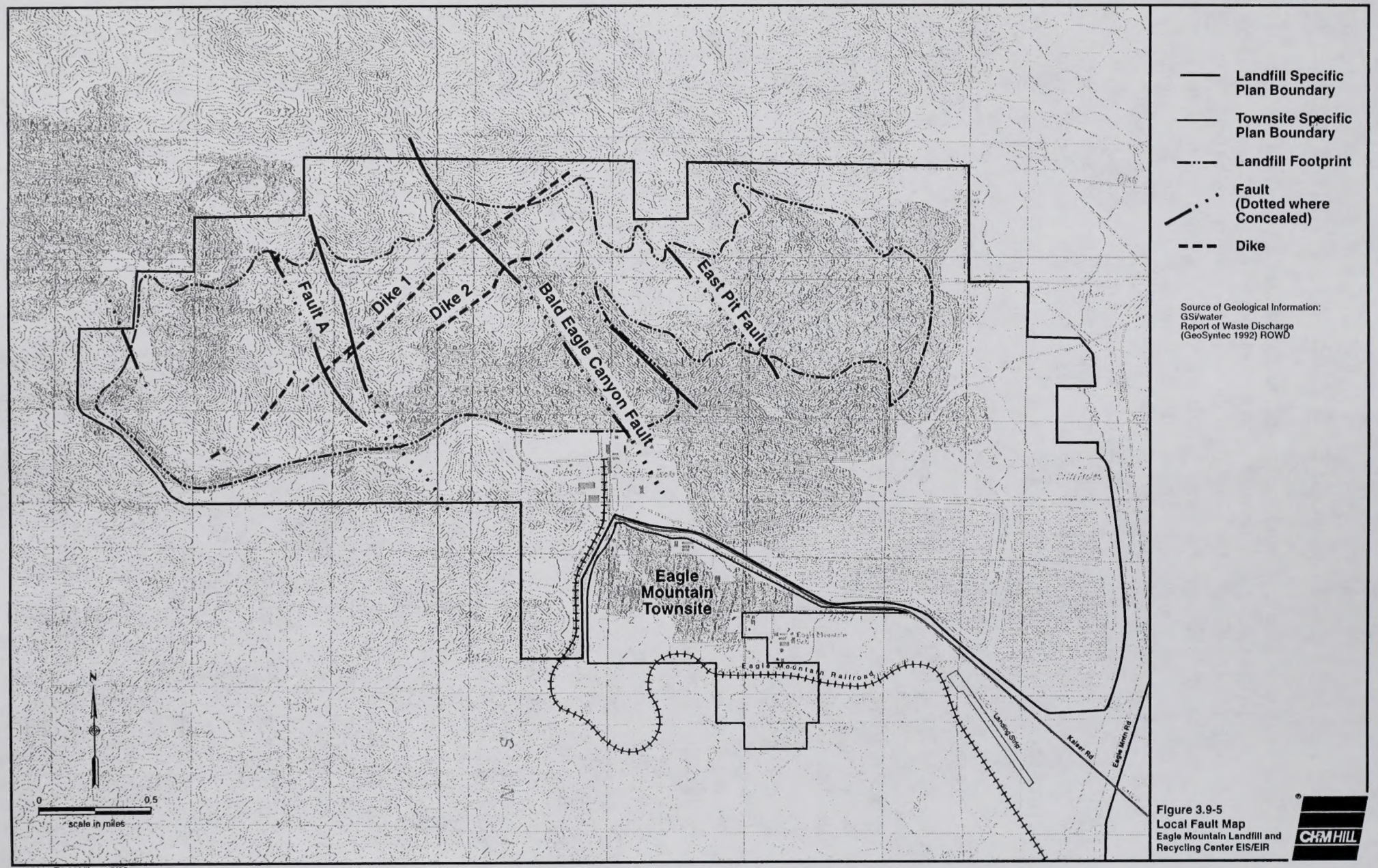
Geologic structures at the site include faults, joints, fractures, folds and bedding. The most prominent features are faults and dikes, which are shown in Figure 3.9-5. The faults were extensively evaluated (Appendices H-1 and H-3) and are characterized as pre-Holocene (i.e., not active). Throughout the area, the mapped faults have steep to nearly vertical dips and trend northwest to southeast. The displacements along the faults range from approximately 1 foot (0.3 m) to several hundred feet (Appendix H-3). The faults do not offset the overlying Quaternary sediments (greater than 1 million years in age) or the quartz latite dikes that cross the fault dated at 124 to 234 million years before the present (GeoSyntec, 1993) indicating the faults last moved 100 million years ago. A more detailed description of the fault rupture evaluation is presented in Section 3.9.2.

Bedrock jointing in the vicinity of the Project site was extensively evaluated by surface mapping, oriented bedrock cores, and borehole video logging (Appendix C-4). The data obtained include measurement of joint spacing, aperture, and orientation. The joint systems are prominent, extensively interconnected, and well developed. The most highly developed, or primary, system correlates with the orientation of the major faults in the vicinity of the Project that trend northwest-southeast. The secondary joint set is approximately perpendicular to the primary set and trends northeast-southwest.

The meta-sedimentary rocks were initially deposited as flat lying deposits of sandstone, carbonate, and conglomerate. They were subsequently folded, forming an anticline (i.e., a fold that is convex upward) extending across the Eagle Mountains in a northwest-southeast trending direction. The bedding in the project site range in dip from 30 to 60 degrees. The meta-sedimentary rocks range from 1/4 of an inch to a few feet in thickness.

3.9.2 General Seismicity

This section presents a general overview of the seismicity in the vicinity of the Project site, including discussions of evaluations that have been conducted for fault rupture and seismic hazard.



m115231.T6.20/dikes 6/96

Figure 3.9-5
Local Fault Map
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2MHILL

3.9.2.1 Superior Court Ruling on Previous EIR

The Superior Court judgment found that the studies that were performed to evaluate the existence of Holocene faults at or within 200 feet of the project site addressed by the previous EIR were not made sufficiently available for public review, and that the ability of the landfill liner to withstand seismic activity should be evaluated in the EIR. The Northridge and Loma Prieta earthquakes were cited by the Court as examples where structures were designed to withstand earthquakes yet failed.

3.9.2.2 General Overview

The Project site is located to the east of the zone of major historic recorded seismic activity in southern California. Based on records of historical seismicity, the western portion of Southern California is more seismically active than the eastern portion where the proposed Project would be located. This zone of seismic activity is shown in Figure 3.9-6. The western portion of Southern California is more seismically active because of the basic differences in the geological environment between the western and eastern portions of Southern California. In addition, the number and length of the active faults decreases from west to east within the western portion of Southern California. The southern segment of the San Andreas fault is located approximately 33 miles west of the Project site. Other active or potentially active faults include the Pinto Mountain fault, located 28 miles northwest of the site, and the inferred extension of the Blue Cut fault, located 4 miles to the north. In addition to these fault-specific sources, the site is located near the eastern boundary of the Southeast Transverse Ranges seismo-tectonic zone, which is characterized as an area where earthquakes occur due to nonspecific area sources (GeoSyntec, 1993). These regional faults and an accompanying legend are shown in Figures 3.9-7(a) and (b). Two smaller, known faults located closer to the Project site were also evaluated even though they generally have little application in consideration of all the potential seismic sources. The Victory Pass and Substation faults, located 7 and 4 miles from the site, respectively, were evaluated. The seismic studies and analyses performed to date for the Project are in Appendices H-1, H-2, H-3, H-4, and H-5.

Extensive evaluation of the seismicity of the Project site and the surrounding area was performed in response to landfill permitting requirements and requests from RWQCB. In general, the seismic evaluation performed for the proposed Project site included defining the landfill geometry and material strengths, performing a static and dynamic slope stability analysis, and establishing design acceleration, (GeoSyntec, 1996). The evaluation was based on the current federal (40 CFR 258) and state (CCR, Title 23, Chapter 15) regulatory standards for seismic design, and the seismic analysis for the Project site complies with all applicable regulations. These regulations identify numerous seismic hazards including surface faulting (ground rupture), strong ground shaking, ground lurching, liquefaction, seismic/differential compaction (i.e., ground subsidence), landslides/slope failure, and tidal waves (i.e., tsunamis). A detailed technical summary report addressing seismicity of the site

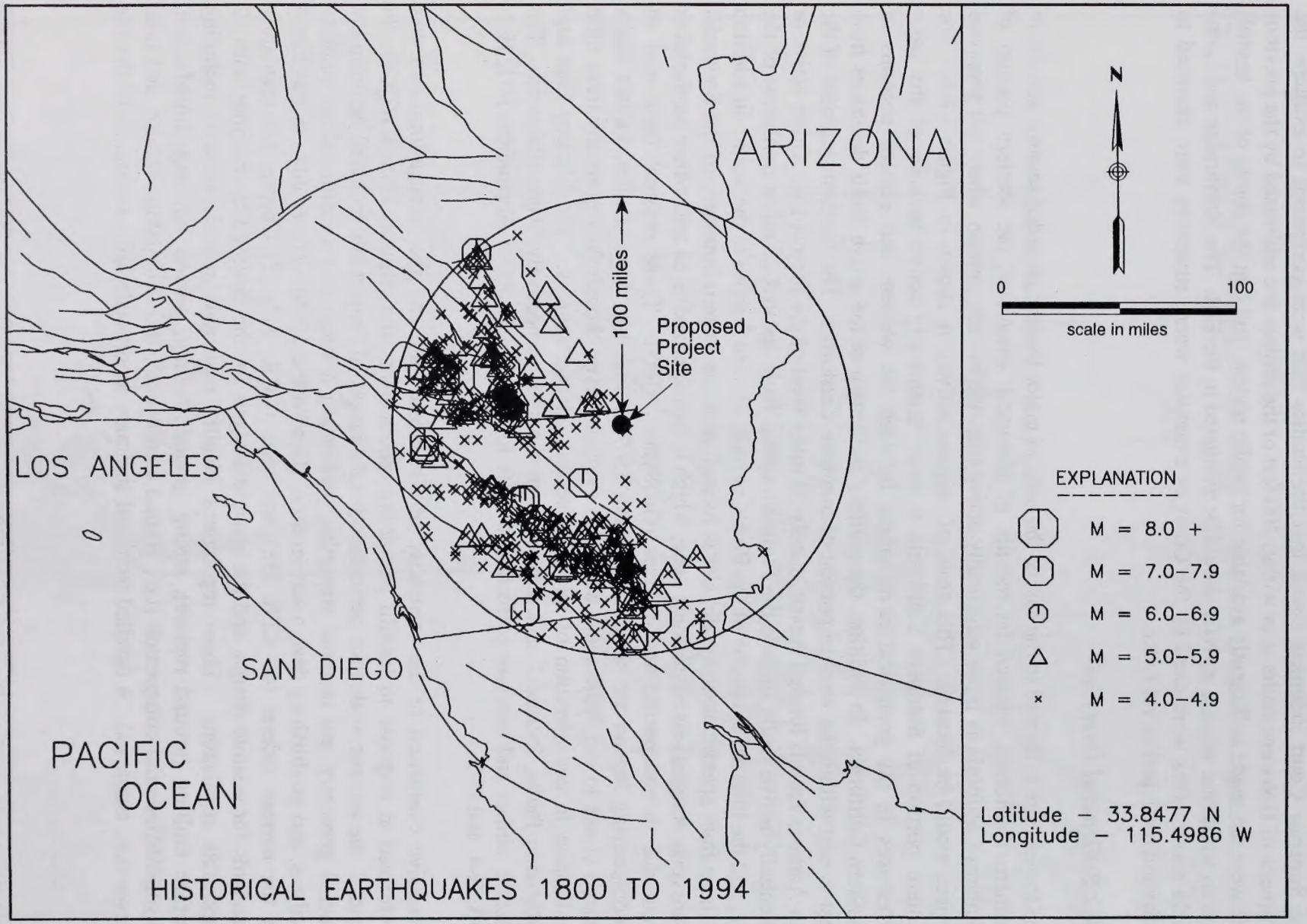


Figure 3.9-6
Earthquake Epicenters Map
Eagle Mountain Landfill and Recycling Center EIS/EIR



Figure 3.9-7(a)
Regional Fault Map
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2MHILL

m115231.T6.20 SCfaults 1/96

Explanation

Fault traces on land are indicated by solid lines where well located, by dashed lines where approximately located or inferred, and by dotted lines where concealed by younger rocks or by lakes or bays. Fault traces are queried where continuation or existence is uncertain. Concealed faults in the Great Valley are based on maps of selected subsurface horizons, so locations shown are approximate and may indicate structural trend only. All offshore faults based on seismic reflection profile records are shown as solid lines where well defined, dashed where inferred, queried where uncertain.

FAULT CLASSIFICATION COLOR CODE
(Indicating Recency of Movement)

Fault along which historic (last 200 years) displacement has occurred and is associated with one or more of the following:

(a) a recorded earthquake with surface rupture. (Also included are some well-defined surface breaks caused by ground shaking during earthquakes, e.g. extensive ground breakage, not on the White Wolf fault, caused by the Arvin-Tehachapi earthquake of 1952). The date of the associated earthquake is indicated. Where repeated surface ruptures on the same fault have occurred, only the date of the latest movement may be indicated, especially if earlier reports are not well documented as to location of ground breaks.

(b) fault creep slippage – slow ground displacement usually without accompanying earthquakes

(c) displaced survey lines.

Pink band added to emphasize location of historic fault displacement.

SPECIAL NOTATIONS

A triangle to the right or left of the date indicates termination point of observed surface displacement.

1951 1951

Date bracketed by triangles indicates local fault break.

No triangle by date indicates an intermediate point along fault break. 1906

Dot on fault indicates location where fault creep slippage has been observed and recorded

Square on fault indicates where fault creep slippage has occurred that has been triggered by an earthquake on some other fault. Date of causative earthquake indicated. Squares to right and left of date indicate terminal points between which triggered creep slippage has occurred (creep either continuous or intermittent between these end points). 1968 1969 1968

Holocene fault displacement (during past 10,000 years) without historic record. Geomorphic evidence for Holocene faulting includes sag ponds, scarps showing little erosion, or the following features in Holocene age deposits: offset stream courses, linear scarps, shutter ridges, and triangular faceted spurs. Recency of faulting offshore is based on the interpreted age of the youngest strata displaced by faulting. Pale orange band added to emphasize location of Holocene fault displacement.

Late Quaternary fault displacement (during past 700,000 years). Geomorphic evidence similar to that described for Holocene faults except features are less distinct. Faulting may be younger, but lack of younger overlying deposits precludes more accurate age classification.

Quaternary fault (age undifferentiated). Most faults of this category show evidence of displacement sometime during the past 1.6 million years; possible exceptions are faults which displace rocks of undifferentiated Plio-Pleistocene age. Unnumbered Quaternary faults were based on Fault Map of California, 1975. See Bulletin 201, Appendix D for source data.

Late Cenozoic faults within the Sierra Nevada including, but not restricted to, the Foothills fault system. Faults show stratigraphic and/or geomorphic evidence for displacement of late Miocene and Pliocene deposits. By analogy, late Cenozoic faults in this system that have been investigated in detail may have been active in Quaternary time. (Data from PG&E, 1993).

Pre-Quaternary fault (older than 1.6 million years) or fault without recognized Quaternary displacement. Some faults are shown in this category because the source of mapping used was of reconnaissance nature, or was not done with the object of dating fault displacements. Faults in this category are not necessarily inactive.

Fault segment associated with a significant linear trend of accurately located earthquake epicenters (magnitude 0.2 or greater). Generally aligned along strike slip faults having Quaternary displacement, but not necessarily with historic surface rupture. Lack of seismic activity along any fault is no indication that the fault may not be active in the future (e.g. San Andreas fault north of San Francisco). Epicenter data are derived from closely spaced seismic stations and include either continuing microseismicity or aftershocks associated with relatively large earthquakes.

S-25

Aligned seismicity on fault segments are referenced in Appendices C and E

ADDITIONAL FAULT SYMBOLS

U = Upthrown side (relative or apparent)
D = Downthrown side (relative or apparent)

Bar and ball on downthrown side (used where space is limited).

Arrows along fault indicate relative or apparent direction of lateral movement.

Arrow on fault indicates direction of dip.

Low angle fault (barbs on upper plate). Fault surface generally dips less than 45° but locally may have been subsequently steepened. On offshore faults, barbs simply indicate a reverse fault regardless of steepness of dip.

Figure 3.9-7(b)
Regional Fault Map Legend
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

is included in Appendix H and is titled "Seismic Information Summary Report." A detailed technical report addressing landfill performance during recent earthquakes in California is included in Appendix H-2 and is titled "Assessment of Landfill Performance in Recent Earthquakes."

3.9.2.3 Fault Rupture Evaluation

Faults are fractures in the earth's crest along which bedrock is displaced or offset as a result of pressures within the earth. An active fault is one where displacement has occurred within the last 11,000 years or so, a period in time referred to as the Holocene Epoch. The federal (40 CFR 258) Subtitle D and State (CCR Title 23, Chapter 15) regulations for landfill siting require that landfills should not be located on or near (within 200 feet) an active, or Holocene, fault. Site-specific investigations have demonstrated that active faulting has not occurred within 200 feet of the Eagle Mountain landfill site, as required by federal and state regulations (Appendices H-3 and H-5). This conclusion is based on site-specific geologic field mapping and trench logging, analyses of aerial photography, soil stratigraphy, reconnaissance of fault scarps by aircraft, geomorphology, and age dating of rock materials (Appendices H-1, H-3, H-4, and H-5). As stated by Shlemon in ROWD, Supplemental Volume 2 (GeoSyntec, 1993), "...all Quaternary (younger than 1.6 million years) deposits were visibly continuous where either overlying bedrock faults, or where lying across projections of these faults. The Eagle Mountain fan deposits have thus provided excellent geomorphic and soil stratigraphic markers from which to assess the relative activity of bedrock faults identified in the proposed landfill site." Based on these studies, the last instance of active faulting at the site occurred at least 40,000 years ago and could have occurred more than 100,000 years ago.

Three nearby faults (i.e., Substation, Victory Pass, and Blue Cut) were studied that are not within 200 feet of the site footprint, but could be significant to the proposed Project (Appendix H-1). They range in location from 4 to 7 miles from the site. The faults were extensively evaluated including microseismic studies, aerial photograph analysis, kinematic evaluation, scarp erosion analysis, and geomorphic studies (Appendices H-1 and H-3). On the basis of this evaluation, it was concluded that some of the features observed along the Blue Cut fault could represent late Pleistocene (i.e., pre-Holocene) movement along a short segment of the eastern portion of the fault approximately 4 miles from the Project site. There is no evidence of Holocene-era faulting on any of these three faults evaluated near the Project site (Appendices H-1 and H-3).

3.9.2.4 Seismic Hazard Evaluation

A probabilistic seismic hazard analysis was performed for the Eagle Mountain Landfill based on known active and potentially active faulting and nonfault-specific seismicity near the site (Appendix H-1). The analysis indicated that the peak horizontal bedrock acceleration at the site with a probability of exceedance of 10 percent in 250 years is 0.56 g (i.e., percentage of the acceleration due to gravity). This equates to a 2,375-year return period. The use of this acceleration level in design is in compliance with federal regulatory requirements (40 CFR

258) and significantly exceeds state regulatory requirements (CCR Title 23, Chapter 15) (i.e., MPE with 100-year return interval). This design horizontal ground acceleration is primarily attributable to random, nonfault specific seismicity within the Southeast Transverse Ranges and, for engineering analysis purposes, is associated with an earthquake of magnitude 6.0 (Richter magnitude). As a comparison, the MPE event along the portion of the San Andreas fault that passes closest to the site (i.e., 33 miles) would produce a peak horizontal bedrock acceleration of about 0.14 g at the site.

The seismicity studies performed for the proposed landfill also addressed evaluation of slope stability and seismic issues (Appendix H-1). The most recent information on the seismicity of the San Andreas fault was evaluated. The design events and strong motion records used in the design were compared to the current understanding of the site seismicity. A permanent deformation analysis of the landfill caused by a large earthquake on the San Andreas fault was conducted (Appendix H-1). In addition, the strength parameters used in the slope stability design analysis were evaluated for the liner and the final slopes of the landfill created by placement of refuse. This was compared to the evaluation of ground accelerations at the site resulting from an earthquake event on the Blue Cut fault. The results are that the current landfill design will be stable with adequate factors of safety under static and seismic loading conditions (Appendix H-1).

3.9.3 Mineral Resources

The Project site is the former site of the largest iron mining operation west of the Mississippi River. Kaiser began the iron mining operation in 1948 and continued until 1983 when economic conditions caused full-time mining operations to cease. Most of the ore processing and refining facilities have been removed (see Section 3.5). Four large open pits approximately 1 to 2 miles long were excavated during Kaiser's operations at the Eagle Mountain Mine. The Black Eagle Pit (North) and Black Eagle Pit (South) are the western portions of the mining operations. The other two are the Central Pit and the East Pit. The ore reserve areas in the vicinity of the proposed Project are shown in Figure 3.9-8. Approximately 228 million short tons of crude iron ore were mined at the site during the active life of the mine. Small-scale gold and base metal mining has been conducted in the Eagle Mountains, most of it occurring before the iron mine was in operation.

3.9.3.1 Iron Ore Resources

The most recent data for geologic iron ore deposits at the Eagle Mountain Mine show that approximately 335 million short tons of iron-bearing material grading from 34.7 to 48.5 percent iron exist in nine separate resource areas at the mine (California Department of Conservation, Division of Mines and Geology, 1994; SCS 1991). These data for the pit areas at the Eagle Mountain Mine are presented in Table 3.9-2. The areas in which these ore reserves are located at in the vicinity of the Project site are shown in Figure 3.9-8. According to the Division of Mines and Geology (Mineral Land Classification in the Eastern Half of Riverside County, California, Open File Report 94-11, 1994):

> "An area of about 2.1 square miles in the northern Eagle Mountains is classified as MRZ-2a for iron. The zone includes the inactive Eagle Mountain Iron Mine, which has been owned by Kaiser Steel Corporation since 1944. The iron deposit is underlain by a thick series of metasediments resting on Proterozoic gneiss, schist, and quartzite which has been intruded by Mesozoic sill-like masses of quartz monzonite. Northeast trending intermediate dikes (mainly andesite and andesite porphyry) and less abundant northwest trending aplite and monzonite porphyry dikes intrude the quartz monzonite and older rocks."

MRZ-2a refers to Mineral Resource Zone areas underlain by mineral deposits where geologic data indicate that significant measured or indicated resources are present. According to the Surface Mining and Reclamation Act, Section 2790, specific geographic areas of the state may be classified areas of statewide or regional significance. For areas with this classification, consideration must be given to "the adverse effects that might result from premature development of incompatible land uses, the advantages that might be achieved from extraction of the minerals of the area, and the specific goals and policies to protect against the premature incompatible development of the area."

In addition to net tonnages, average iron content for each resource area and the anticipated iron unit recovery (calculated on the basis of Kaiser's recovery factors at the time of curtailment of mining activity) are presented in the ROWD (GeoSyntec, 1992).

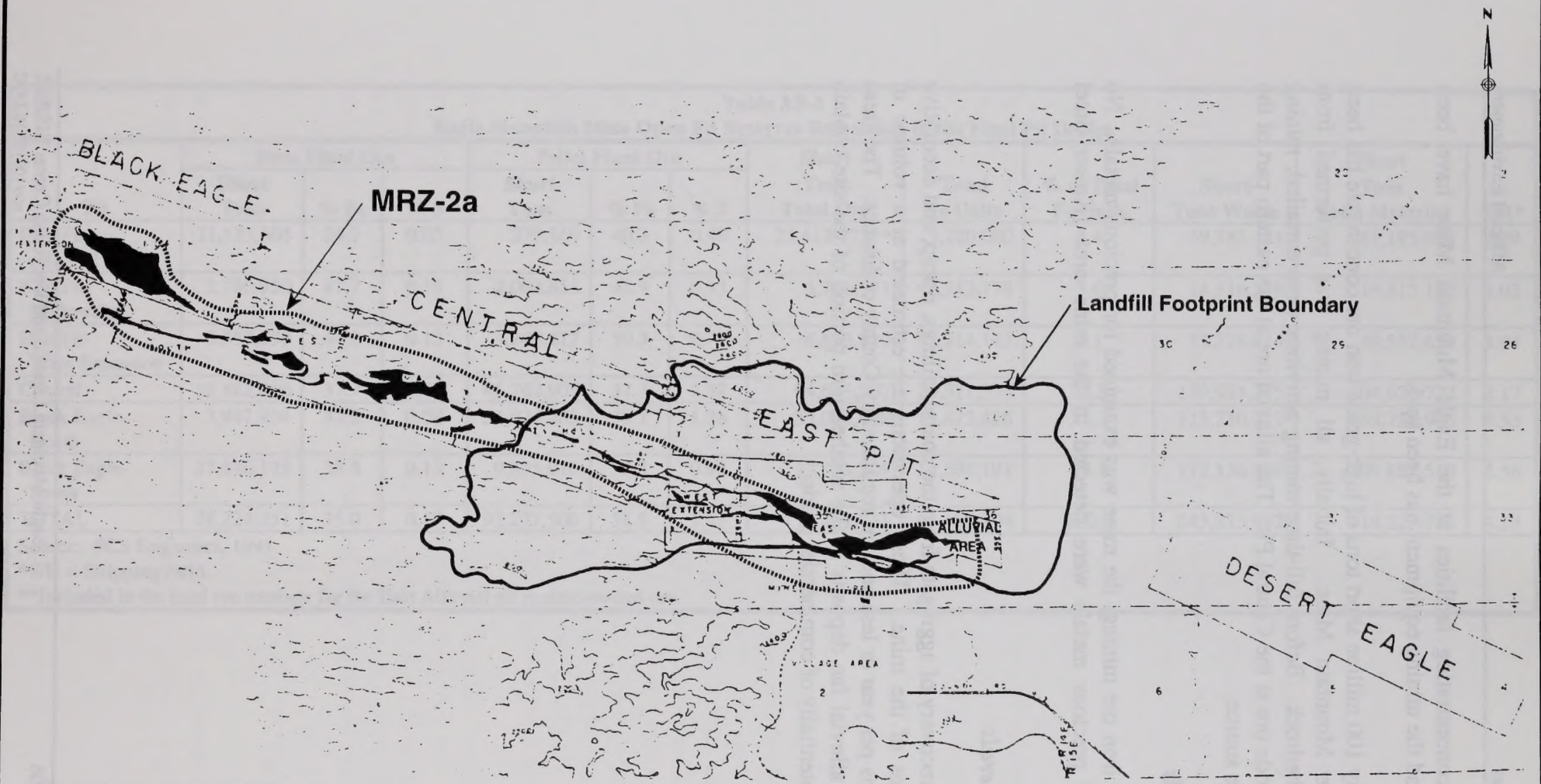
Full-time mining at the Eagle Mountain Mine was curtailed because the ore deposits are no longer considered economically feasible to mine (see Section 3.5, Land Use). Of the iron ore resources at Eagle Mountain, approximately 170 million short tons would be economically available for recovery (1.05 percent of U.S. geologic reserves) after mine closure (GeoSyntec, 1992; California Division of Mines and Geology, 1994). According to the County of Riverside, vested mining rights no longer exist at the Eagle Mountain Mine because iron ore mining ceased in 1983, and future mining of the site would require the issuance of a permit in accordance with County Ordinance 555. Kaiser asserts that mining rights continue to exist at the formerly active mine.

Open pit reserves based on an average stripping ratio of 3:1 exist at Eagle Mountain. Approximately 92 million short tons of iron ore reserves at Eagle Mountain (or 54 percent of the total open pit reserves at the mine) are magnetite with subordinate pyrite. These deposits have an average iron content of 38.9 percent and an average sulfur content of 1.41 percent (Table 3.9-3). In addition, approximately 78 million tons of iron ore reserves at Eagle Mountain (or 46 percent of total open pit reserves at the mine) are mixtures of magnetite with secondary hematite, and subordinate pyrite. These deposits have an average iron content of 35 percent and a sulfur content of 0.17 percent. The East Pit–Alluvial resource area is a placer deposit (alluvium derived from erosion of a bedrock ore deposit) as opposed to a lode or bedrock deposit. There is a 21.4 million short ton placer of iron-ore reserve in the alluvial East Pit.

Table 3.9-2
Eagle Mountain Geologic Ore Reserves
(As of January 1, 1983)

Resources	Short Tons	Percent Fe	Million Units	
			Total Fe Units	Recoverable Fe Units*
Measured				
East Pit	28,431,454	39.7	1,128.7	756.2
East Pit–West Extension	7,177,775	46.7	335.2	224.6
Central–TV Hill	48,061,239	37.3	1,792.7	1,201.1
Central–Main	42,265,029	37.3	1,576.5	1,056.2
Central–West	22,231,617	38.3	851.5	570.5
Black Eagle–North	49,785,843	39.6	1,971.5	1,320.9
Black Eagle–South	11,236,800	40.2	451.7	302.7
Black Eagle–West Extension	1,597,826	38.6	61.7	41.3
Desert Eagle	28,044,000	48.5	1,360.1	911.3
Subtotal	**238,831,583**	**39.9**	**9,529.6**	**6,384.8**
Indicated				
East Pit	10,639,420	42.4	451.1	302.2
East Pit–West Extension	5,503,346	44.3	243.5	163.3
Central–TV Hill	15,364,944	37.4	574.6	385.0
Central–Main	6,361,767	40.2	255.7	171.3
Central–West	8,536,628	38.5	328.7	220.2
Black Eagle–North	19,401,207	37.8	733.4	491.4
Black Eagle–South	5,058,600	34.7	175.5	117.6
Black Eagle–West Extension	1,009,008	38.2	38.5	25.8
Desert Eagle	24,826,000	41.1	1,020.3	683.6
Subtotal	**96,700,920**	**39.5**	**3,821.6**	**2,560.5**
TOTAL	**335,532,503**	**39.8**	**13,351.2**	**8,945.3**

Source: SCS Engineers 1991
Fe: Iron
*An Fe unit recovery of 67 percent was used based on past plant performance and metallurgical tests on drill core.



Source: The PRA Group, Inc., 1991

Figure 3.9-8
Location of Ore Reserve Areas
Eagle Mountain Landfill and Recycling Center EIS/EIR

The ore crushing and concentrating facilities at the Eagle Mountain Mine have been dismantled for salvage, and the mining equipment has been sold.

Since 1948, approximately 100 million short tons of high-grade iron ore concentrate has been shipped from the Eagle Mountain Mine. Initially, all mining was performed from replacement deposits in bedrock. Before full-time mining activities were curtailed, mining was concentrated in the lode ore at the Central Pit. The alluvial ore at the eastern part of the East Pit was a subordinate source.

3.9.3.2 Precious Metals

Following suspension of iron ore mining, the mine was examined for precious metals. No significant quantities of precious metals were detected in the mine area (Kaiser Steel Resources, 1990).

3.9.3.3 Industrial Minerals

There is currently some recovery of aggregate from the coarse tailings, riprap, and decorative stone from other portions of the mine. These operations are estimated at a volume of approximately 10,000 tons per year or less and are regulated by County ordinance. The areas of the mine overlain by alluvial fan deposits in the southeastern portion of the site contain sand and gravel that is potentially of commercial grade.

Table 3.9-3
Eagle Mountain Mine Open Pit Reserves Remaining in the Final Pit Design

Pit	Bene Plant Ore			Pellet Plant Ore			Short Tons Total Ore	Total Fe Units	% of Total Fe Units	Short Tons Waste	Short Tons Total Material	S/R*
	Short Tons	% Fe	% S	Short Tons	% Fe	% S						
East Pit-Alluvial	21,133,604	24.7	0.05	279,169	40.3	0.40	21,412,773**	5,220,000	8.4	59,783,151	81,195,924	2.79
East Pit-Midsection	2,786,920	47.7	0.18	2,009,851	48.9	0.93	4,796,771	2,312,178	3.6	14,516,376	19,313,147	3.03
East Pit-West Extension	3,557,598	44.2	0.13	3,246,212	50.3	0.73	6,823,810	3,214,143	5.1	33,728,814	40,552,624	4.94
Central	18,882,600	37.7	0.40	45,762,907	37.7	1.38	64,645,507	24,371,356	38.5	139,981,215	204,626,722	2.17
Black Eagle-North	3,947,404	33.5	0.08	31,074,285	39.1	1.76	35,021,689	13,472,426	21.3	123,730,217	158,751,906	3.53
Black Eagle-South	27,896,125	38.8	0.13	9,855,076	38.3	0.82	37,751,201	14,598,191	23.1	172,136,309	209,887,510	4.56
TOTAL	78,224,251	35.0	0.17	92,227,500	38.9	1.41	170,451,751	63,188,294	100.0	543,875,982	714,327,733	3.19

Source: SCS Engineers, 1991.
*S/R = Stripping ratio.
**Included in the total ore tonnage for the East Alluvial pit is state-owned ore.

3.10 Visual and Recreation

This section presents the existing conditions for visual and recreational resources, including components that potentially affect JTNP and wilderness areas (see Section 3.11) near the Project site. The existing conditions for visual resources (Section 3.10.1) and the subsequent analysis of environmental impacts associated with the proposed action and alternatives (Section 4.10.2) have been prepared using methods described in Section 3.10.1.3. Existing conditions for windblown dust and debris are in Section 3.10.2, and night lighting is discussed in 3.10.3. Recreational uses in the vicinity of the Project site are discussed in Section 3.10.4. Additional information on visual resources is in Appendix I, *Visual Analysis,* of this EIS/EIR.

3.10.1 Visual Resources

This section presents the existing conditions for visual resources in the vicinity of the Project site. The general regional character of the landscape and the Project area landscape type and units are discussed first. This is followed by an overview of the methodology for classifying visual resources in the Project vicinity.

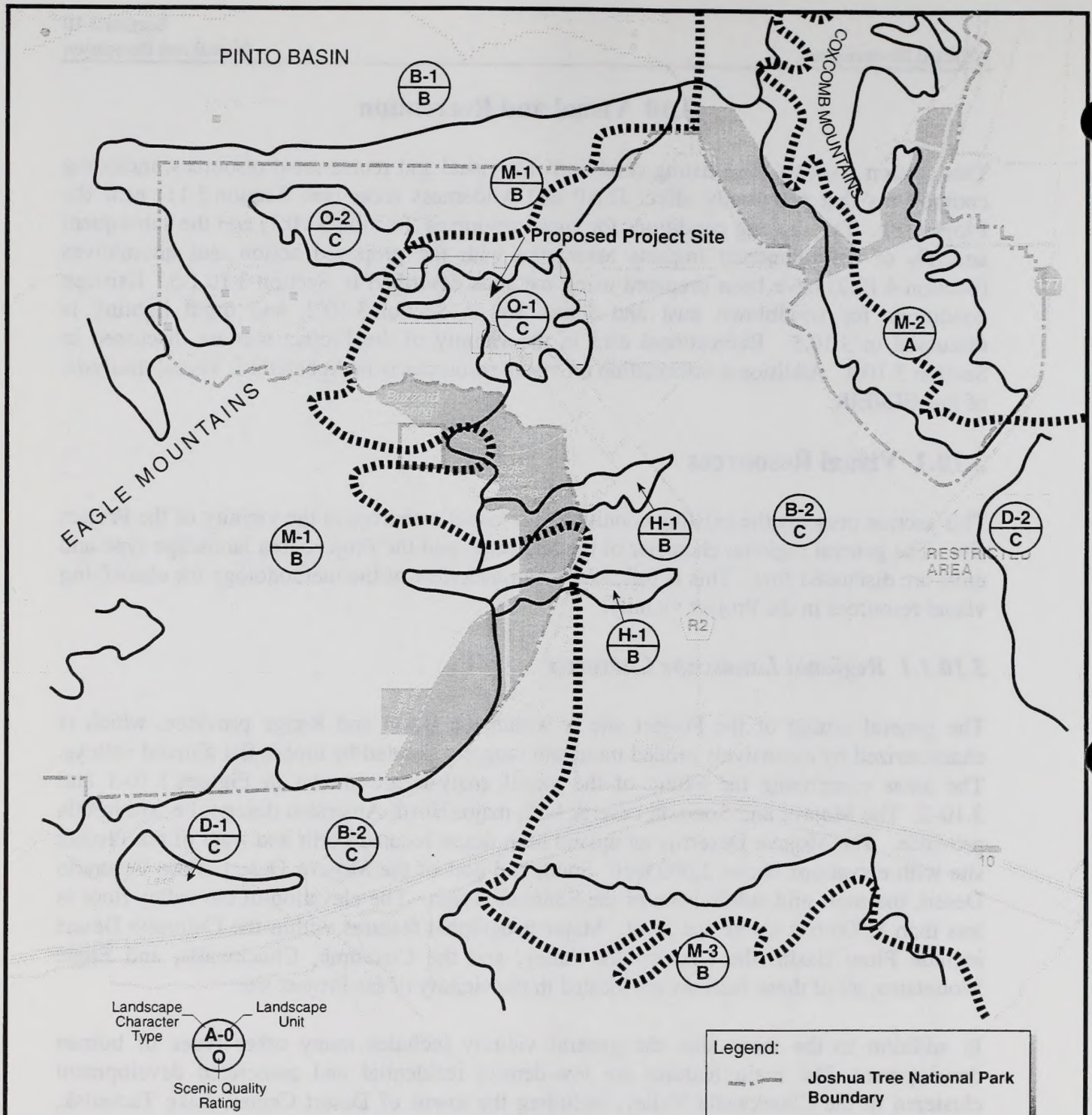
3.10.1.1 Regional Landscape Character

The general setting of the Project site is within the Basin and Range province, which is characterized by extensively eroded mountain ranges separated by broad, flat alluvial valleys. The areas comprising the extent of the visual analysis are shown in Figures 3.10-1 and 3.10-2. The Mojave and Sonoran deserts, both major North American deserts, lie within this province. The Mojave Desert is an upland high desert located north and west of the Project site with elevations above 2,000 feet. South and east of the Mojave Desert is the Colorado Desert, the most arid subdivision of the Sonoran Desert. The elevation of the valley floor is less than 1,500 feet above sea level. Major geographic features within the Colorado Desert include Pinto Basin, the Chuckwalla Valley, and the Coxcomb, Chuckwalla, and Eagle Mountains; all of these features are located in the vicinity of the Project site.

In addition to the mine site, the general vicinity includes many other types of human development. The main features are low-density residential and associated development clustered in the Chuckwalla Valley, including the towns of Desert Center, Lake Tamarisk, and the Eagle Mountain Townsite. Other built features are primarily linear features such as roads, railroads, power transmission lines, and water aqueducts (see Section 3.5, Land Use, and Section 3.11, Wilderness).

3.10.1.2 Visual Resource Methodology

The classification and evaluation of visual resources in the Project vicinity is based on the methodology developed by the BLM, Division of Recreation and Cultural Resources, and



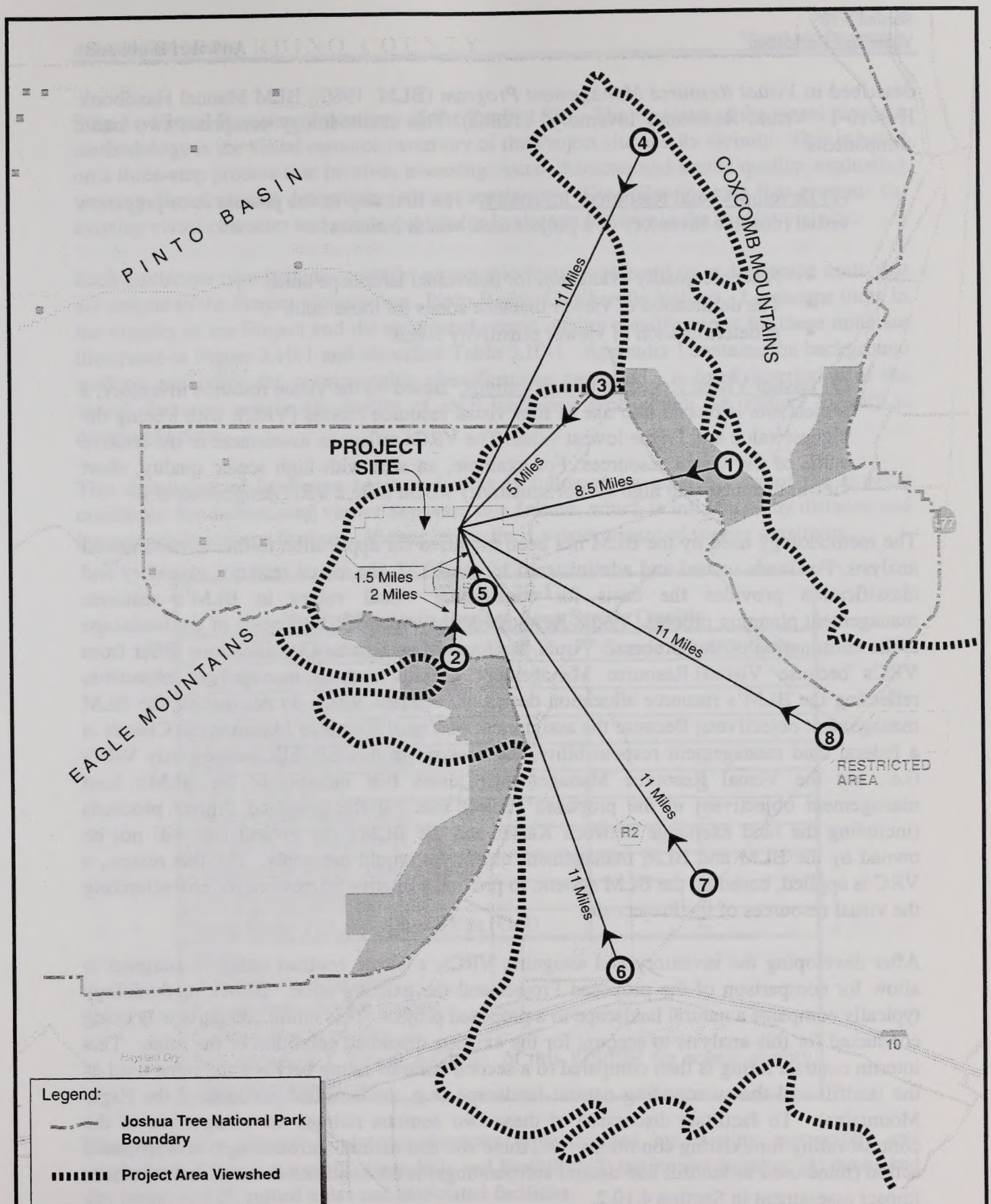
Landscape Character Types and Units			Scenic Quality Rating	
Mountains	M-1	Eagle Mountains	B	Medium
	M-2	Coxcomb Mountains	A	High
	M-3	Chuckwalla Mountains	B	Medium
Steep Hills & Foothills	H-1	Eagle Mountain Foothills	B	Medium
Basins & Bajadas	B-1	Pinto Basin	B	Medium
	B-2	Chuckwalla Valley	C	Low
Dunes & Dry Lakes	D-1	Hayfield Dry Lake	C	Low
	D-2	Chuckwalla Valley Dunes	C	Low
Mined Areas & Associated Facilities	O-1	Eagle Mountain	C	Low
	O-2	Black Eagle	C	Low

Note: Views from Eagle Mountains and Pinto Basin obscured by intervening mountains and landscape. This figure depicts the Project area viewshed at full build-out of the landfill.

Figure 3.10-1
Project Vicinity Landscape Units and Scenic Quality Rating
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2MHILL

m115231.T6.20 PA Lndscpe 6/96



Note: Views from Eagle Mountains and Pinto Basin obscured by intervening mountains and landscape. This figure depicts the Project area viewshed at full build-out of the landfill.

Figure 3.10-2
Project Vicinity Viewshed, Key Observation Points, and Viewing Distances
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 PA View Shed 6/96

described in *Visual Resource Management Program* (BLM, 1980), BLM Manual Handbook H-8410-1 "Visual Resources Inventory" (1986a). This methodology comprises two main components:

(1) Develop Visual Resources Inventory. The first step in the process is to prepare a visual resource inventory of a project area, which includes:

- A scenic quality evaluation for individual landscape units
- The delineation of viewer distance zones for those units
- A determination of viewer sensitivity levels

(2) Assign Visual Resource Classifications. Based on the visual resource inventory, a project site is placed into one of four visual resource classes (VRC), with I being the highest value and IV the lowest value. The VRCs reflect an assessment of the relative value of the visual resources. For example, an area with high scenic quality, short viewer distance, and high viewer sensitivity would have a VRC designation of I.

The methodology used by the BLM has been modified for application to this environmental analysis. For lands owned and administered by the BLM, the visual resource inventory and classification provides the basis for considering visual values in BLM's resource management planning process. Visual Resource Management Classification of the landscape is the culmination of this process. Visual Resource Management Classifications differ from VRCs because Visual Resource Management Classes include management objectives reflecting the BLM's resource allocation decisions, whereas VRCs do not include the BLM management objectives. Because the assignment of Visual Resource Management Classes is a federal land management responsibility, the analysis in this EIS/EIR assigns only VRCs (i.e., not the Visual Resource Management Classes that incorporate the BLM's land management objectives) to the proposed Project site. If the proposed Project proceeds (including the land exchange between Kaiser and the BLM), the Project site will not be owned by the BLM and BLM management objectives would not apply. For this reason, a VRC is applied, based on the BLM system, to provide a relative framework for characterizing the visual resources of the Project site.

After developing the inventory and assigning VRCs, a visual contrast rating is assigned to allow for comparison of the proposed Project and the existing mine. BLM's methodology typically compares a natural landscape to a proposed project. This initial comparison is being conducted for this analysis to account for the existing disturbed condition of the mine. This interim contrast rating is then compared to a second contrast rating between the mine used as the landfill and the surrounding natural landscape (e.g., undisturbed portions of the Eagle Mountains). To facilitate discussion of these two contrast ratings, the comparison of the contrast rating for existing conditions (i.e., mine site and natural surroundings) and proposed action (mine used as landfill and natural surroundings) is consolidated in the visual resources impact assessment in Section 4.10.2.

A more detailed description of the modified BLM methodology is described in Appendix I.

Step 1: Visual Resource Inventory of the Project Site. The first part of the visual resource methodology is the visual resource inventory of the Project site and its vicinity. This is based on a three-step process that involves assessing visual character and scenic quality; evaluating viewing distances; and determining viewer sensitivity. The following text first presents the existing visual character and scenic quality for landscape features in the Project vicinity.

Each landscape type includes specific geographic features referred to as landscape units that are unique to the Project vicinity (e.g., Pinto Basin, Chuckwalla Valley). Landscape units in the vicinity of the Project and the associated scenic quality classifications for these units are illustrated in Figure 3.10-1 and identified Table 3.10-1. Appendix I contains the background analysis generating the scenic quality classifications presented. A brief description of the visual character and scenic quality of each landscape type within the Project vicinity is discussed below.

This discussion of landscape types and units is followed by an overview of the existing conditions for determining viewer exposure to a feature, which is influenced by distance and intervening landscape features. Viewer exposure is a determinant of viewer sensitivity.

Table 3.10-1
Eagle Mountain Project Area Scenic Quality

Scenic Quality Landscape Unit	Scenic Quality Class
Eagle Mountains (M-1)	B
Coxcomb Mountains (M-2)	A
Chuckwalla Mountains (M-3)	B
Eagle Mountain Foothills (H-1)	B
Pinto Basin (B-1)	B
Chuckwalla Valley (B-2)	C
Hayfield Dry Lake (D-1)	C
Chuckwalla Valley Dunes (D-2)	C
East Pit and Townsite (O-1)	C
Black Eagle Pits and Central Pits (O-2)	C

Notes:
A = high scenic quality
B = moderate scenic quality
C = low scenic quality
See Appendix I, Visual Analysis, of this EIS/EIR for scenic quality class determinations

There are five distinct landscape character types formed by existing topography and vegetation: (1) mountains; (2) steep hills and foothills; (3) basins and bajadas; (4) dunes and dry lakes; and (5) mined areas and associated facilities.

Mountains. The Project vicinity contains three distinct mountain ranges: the Eagle Mountains (M-1), Coxcomb Mountains (M-2), and Chuckwalla Mountains (M-3).

Visual Character. The Eagle, Coxcomb, and Chuckwalla Mountains are characterized by their extremely rugged and rocky terrain rising sharply (i.e., 25 percent slopes and greater) from the adjacent flat desert floor. Of these three mountain ranges, the Coxcomb Mountains have the most rugged terrain, with vertical rock spires rising up to 300 feet in height. These mountains exhibit a variety of colors (i.e., shades of gray, mauve, brown, and tan) and vegetation consists of a sparse desert scrub cover that results in overall mottled and coarse-textured appearance of the Coxcomb Mountains.

Scenic Quality. The moderate to high scenic quality of these mountain ranges is a result of the strong visual contrasts between their rugged form and silhouette with the adjacent, flat basin landforms. These mountains surround the Project and form the backdrop for panoramic views throughout the Chuckwalla Valley. Within the Project vicinity, mountains have a higher scenic quality than most other landscape features (e.g., dunes, dry lakes). The scenic qualities of the Eagle and Chuckwalla Mountains are, however, fairly characteristic of the regional landscape; therefore, the overall scenic quality of these two mountain areas is moderate (i.e., Class B). The Coxcomb Mountains are more visually diverse and unique in terms of landform and their scenic quality is rated high (i.e., Class A).

Steep Hills and Foothills. The Eagle Mountain foothills (H-1) are located adjacent to and east of the Eagle Mountains.

Visual Character. The Eagle Mountain foothills are lower in elevation and smaller in scale than the adjacent mountains. Vegetative cover along these foothills is either nonexistent or consists of very sparse desert scrub. The color of these foothills is similar to and is visually harmonious with the dark, muted shades of gray, mauve, brown, and tan of the adjacent mountains.

Scenic Quality. The steep hills and foothills of the Eagle Mountains introduce some visual variety to the Project vicinity's landscape. These simple, rounded landforms are, however, visually less dominant in terms of scale and complexity compared to the adjacent mountains. Overall scenic quality of this landscape unit is medium (Class B).

Basins and Bajadas. Two distinct geographic basins, Pinto Basin (B-1) and the Chuckwalla Valley (B-2), are in the area addressed in the visual analysis.

Visual Character. The Pinto Basin and the Chuckwalla Valley are expansive basins consisting of relatively flat to gently sloping floors that separate adjacent mountain ranges. The upper edges of the basins are generally characterized by gently sloping areas of alluvial soil deposited by drainage off the mountains (i.e., bajadas). The bajada that extends from the base of the Coxcomb Mountains is covered with coarse gravel and has a dark surface. The other basins and bajadas are characterized by lighter shades of tans and browns. Most of these areas are covered with an even, sparse distribution of trees and shrubs.

Within the Chuckwalla Valley, the natural qualities of this landscape unit are disturbed by residential and commercial development at Desert Center, Lake Tamarisk, and the Townsite. The engineered, linear elements within this unit include paved and unpaved roads, aerial power lines, railroad tracks, and the Colorado River Aqueduct (see Figure 1-2). The primary transportation corridors are Interstate 10 and Highway 177. Interstate 10 traverses the Chuckwalla Valley in an east-west direction. Highway 177 extends in a north-south direction off Interstate 10 through the Chuckwalla Valley and east of the Coxcomb Mountains.

Scenic Quality. These two basins offer panoramic, unobstructed views across the desert floor to the surrounding mountain ranges. The flat topography of these landscape units heightens the visual quality of the adjacent mountain ranges. The overall scenic quality of the Pinto Basin is moderate (Class B). The overall visual quality of the Chuckwalla Valley unit is, however, low (Class C) because existing development (e.g., electrical transmission lines, telephone poles, residential developments, MWD pumping station) within this unit distracts from the natural qualities of this landscape.

Dunes and Dry Lakes. Hayfield Dry Lake (D-1) is located in the southwest corner of the Project vicinity directly north of Interstate 10. The Chuckwalla Valley Dunes (D-2) are located in the far southeastern corner of the project area. Both of these landscape units are located within the Chuckwalla Valley basin.

Visual Character. Both the Hayfield Dry Lake and the Chuckwalla Valley Dunes are visually differentiated from the basin in which they lie because they are lighter in color and are the lowest areas of the regional landscape. These areas are flat to slightly undulating in form and support little to no shrub cover.

Scenic Quality. Compared to other, similar landscape features in the region, these landscape units are smaller in scale and isolated from other dune and dry lake areas. These areas offer little visual variety or distinction in terms of landform or vegetation and have an overall low scenic quality (Class C).

Mined Areas and Associated Facilities. The East Pit, Black Eagle Pits (North and South), and Central Pits (O-1 and O-2) are highly disturbed landscape units comprising open pit surface mines, tailing and overburden piles and ponds, plant operation and equipment areas, and a sewage treatment plant. (These pit areas are shown in Figure 3.9-10). A residential area (i.e., the Townsite), which provided housing for mine employees, is located to the south of the mine site.

Visual Character. The horizontal, repetitive terrace line and form of the mined areas contrasts distinctively from the adjacent rugged and eroded natural topography. The flat, strong horizontal form of the tailings piles also contrasts with the natural character of the area.

Exposed cut or fill areas are lighter in color than the natural gray-brown-mauve tones of the adjacent undisturbed areas. The tailing piles are a darker color similar to the surface rocks of the adjacent mountains. Compared to the rugged and coarse texture of the surrounding topography, the slopes of the mine and tailing piles have a regular, even appearance and texture.

The Townsite consists of a network of low-scale (i.e., one-story), residential and commercial development and supporting infrastructure, as well as a private community correctional facility. Visually, the Townsite appears sparsely populated and many buildings appear deteriorated.

Scenic Quality. The modifications in the mined areas contribute to the uniqueness of these landforms within the region. These features are not, however, visually compatible with the adjacent form, line, color, and texture of the surrounding mountains. The overall visual quality is low.

Viewing Distances and Viewer Sensitivity. The sensitivity level of a viewer group is normally measured in terms of two factors: (1) exposure to a feature and (2) visual sensitivity. The visual sensitivity and viewer distances have been determined only for the Project site because that is the main area of potential impact.

Exposure is a factor of the actual number of viewers who would see a particular project. Visual sensitivity is largely a factor of a viewer's activity and his or her expectations for the visual environment. The three viewer groups in the Project vicinity that are most sensitive to the visual environment are recreationists, residents, and motorists. A description of viewer sensitivity for each of these three groups is described below in more detail.

Viewer Exposure. As discussed above, the second component of the sensitivity level of a viewer group is viewer exposure to the proposed landscape feature. On the basis of computerized topographic modeling conducted for this EIS/EIR, a Project viewshed boundary was identified. This viewshed, which is shown in Figure 3.10-1, depicts general visibility of the mine site and the Townsite. (This viewshed is a conservative view estimate based on full buildout of the proposed landfill from within the surrounding Project vicinity.) Local vegetation, structures, and other obstructions were not factored into the topographic modeling, and these potential obstructions could completely or partially block views from some areas shown as being visible within the site's viewshed. As shown in Figure 3.10-1, the proposed Project is most visible for the greatest distance to the southeast of the Project site (i.e., from the Chuckwalla Valley) and directly east of the Project site (i.e., from the Coxcomb Mountains, approximately 5 miles away). Except for the ridge areas of the Eagle Mountains to the southwest of the site that are in designated nonwilderness areas, the Eagle Mountains largely block views of the site. Views from Pinto Basin are blocked by intervening mountains.

Eight locations were selected to represent key observation points (KOPs) of the mine site; these KOPs represent the most sensitive viewer groups within the viewshed. The KOPs were

selected in consultation with NPS. To identify the KOPs, approximately 60 photographs were taken from about 25 vantage points in the Project vicinity to assess the most sensitive viewing locations. (Twenty of these photographic locations were in JTNP. Of the 20 JTNP photographic locations, 4 have partial to unobstructed views of the Project site.) Upon review of the photographs, eight KOPs were identified after consultation with JTNP staff (the remaining view locations were either too distant from the Project site to be seen or were obscured from view by intervening natural features, such as the Eagle Mountains). KOP locations are shown in Figure 3.10-2 and described in Table 3.10-2. (Photographs of existing conditions and simulations of the proposed Project from each KOP are presented in Section 4.10.2.)

Table 3.10-2
Key Observation Points (KOPs), Distance Zones, and Sensitivity Levels

KOP	Viewing Distance	Sensitivity Level	Description
Views from JTNP			
1	8.5 miles (bg)	High	Looking west from Coxcomb Mountain Trailhead
2	2 miles (fg/mg)	High	Looking north from Eagle Mountains near JTNP boundary
3	5 miles (mg/bg)	High	Looking southwest from road to Pinto Wells at JTNP Boundary
4	11 miles (bg)	High	Looking southwest from Coxcomb Mountains
Views from Townsite			
5	1.5 miles (fg/mg)	Moderate	Looking north from Townsite
Other Views			
6	11 miles (bg)	High	Looking northwest from Interstate 10 at Desert Center
7	11 miles (bg)	Moderate	Looking northwest from State Highway 177 at Lake Tamarisk
8	11 miles (bg)	Moderate	Looking northwest from State Highway 177 in Chuckwalla Valley

Notes: fg/mg = foreground/middleground (3 to 5 miles)
bg = background (5 to 15 miles)
JTNP = Joshua Tree National Park

The Project viewshed encompasses those areas primarily east and southeast of the mine site. The majority of the mine site is visible from within the Chuckwalla Valley, including from portions of Desert Center and Lake Tamarisk (KOP Nos. 6 and 7), as well as from the Townsite (KOP No. 5). This mine site is also partially visible from within JTNP at higher elevations along the Coxcomb Mountains to the east and northeast (KOP Nos. 1 and 4), from the southern edge of the Pinto Basin (KOP No. 3), and from the Eagle Mountains to the west and southwest (KOP No. 2). Three of these four sites are within the recently expanded boundaries of the park. The existing topography, specifically the Eagle Mountains, screens views of the site from other areas of JTNP.

The approximate viewing distance between each KOP and the mine site is identified in Table 3.10-2. Within the Project area viewshed, the mine is located in the foreground/ middleground view (i.e., within a 3- to 5-mile radius) from the adjacent Eagle Mountains, the Townsite, and the southeastern portion of the Pinto Basin. The mine is in the background view (i.e., within 5 to 15 miles) from other recreational areas within the JTNP such as the Coxcomb Mountains, as well as from nearby communities and regional roads. Other than

from these eight KOPs, the Project site is seldom seen or is completely obscured from view by intervening topography.

Visual Sensitivity.

Recreationists (Views from JTNP). The most important recreational land use near the Project site is the JTNP, which offers a range of recreation opportunities, including camping, hiking, backpacking, rock climbing, sightseeing, and nature study. The majority of campsites, trails, and visitor facilities are located more than 40 miles from the Project site in the western portion of JTNP, which is outside the viewshed of the analysis conducted in this EIS/EIR. (JTNP, including available recreational pursuits, is further discussed in Section 3.5 and Section 3.10.4.) JTNP encompasses approximately 794,000 acres of land within the Mojave and Colorado deserts. Most of JTNP is designated as wilderness area. Portions of the park that are nearest the former mine site to the south and west (i.e., Eagle Mountains), contain existing infrastructure (e.g., Colorado River Aqueduct) and are designated as nonwilderness areas (see Figure 3.5-3). Areas of JTNP to the north (i.e., Pinto Basin) and east (i.e., Coxcomb Mountains) are designated wilderness areas. JTNP is in the process of developing a Backcountry Management Plan intended to provide specific guidance on the types of uses and activities appropriate in these backcountry and wilderness areas (see Section 3.11, Wilderness).

Annual visitation to JTNP passed the one million mark in 1990 (U.S. Department of the Interior, National Park Service, Denver Service Center, 1994) and reached as high as 1.2 million visitors in 1993 (NPS, 1995a). The majority of visitors use or travel through the Mojave Desert section in the western half of the park outside of the viewshed of the Project. The Project site is located near the southeastern side of the park, which is over 20 miles from the nearest paved road in the JTNP and not visible from the high use areas in the western part of the park. Although no site-specific user information for JTNP is available from NPS (Personal Communication Christine Roberts, CH2M HILL, with Pat McClenahan, Joshua Tree National Park, August 1995), current use of backcountry/wilderness areas near the mine site is likely to be very low in comparison to the park's front country areas because of a lack of visitor facilities (trails and campgrounds) in the area, the prohibition of motorized vehicles and campfires, and the need to pack in all the drinking water needed in the desert environment. Nevertheless, given the general solitude and primitive nature of this environment, and the expectations of the users, backcountry visitors to the Eagle Mountains, Pinto Wells, or the Coxcomb Mountains seeking a wilderness recreation experience would be typically highly sensitive to evidence of human alteration of the natural environment.

On the basis of consultation with NPS staff, it is anticipated that the portions of JTNP in the vicinity of the Eagle Mountain Mine site (i.e., portions of the Eagle Mountains approximately 1.5 miles to the southwest and the Coxcomb Mountains approximately 5 miles to the east) will be designated as a Primitive Wilderness Zone in the Backcountry Management Plan. The objective of the Primitive Wilderness Zone is to allow visitors to experience an "untrammeled" and primitive environment (see Section 3.11). This area, however, is designated as nonwilderness on DOI maps prepared in support of the California Desert

Protection Act (see Section 3.11). Public use within this zone would require a relatively high degree of physical exertion, a large commitment of time, and the application of highly developed outdoor skills (NPS, 1995). Vehicular access to these areas is prohibited and entry is limited to access on foot. The distance of travel and the length of stay is largely governed by how much water an individual can carry. Furthermore, management of visitors to this zone could be strict (e.g., visitor eligibility requirements, limits on length of stay, reservation requirements, etc.) (Joshua Tree National Park Backcountry/Wilderness Management Planning Team, 1995).

Depending on the elevation and angle of view, the mine site can be highly visible or completely unseen from the northern portion of the Eagle Mountains, which are within 2 miles of the Project site. Most hikers use lower elevation canyons and washes on the north side of the mountains for recreation and cannot see the proposed Project site. Hikers following the ridgelines, however, have excellent views of the surrounding landscape, including the mine area, Townsite, MWD facilities, roads, and transmission lines. Backcountry users in the Coxcomb Mountains or Pinto Wells area are more distant from the site (7 miles or greater).

The Chuckwalla Mountains, which are federal lands administered by the BLM, are located south of Interstate 10, and are also used for backcountry recreational purposes. The site is visible from the north slopes of the Chuckwalla Mountains but its distance from these mountains (about 15 miles) decreases the significance of site views from this area.

Residential Areas (Views from Townsite, Desert Center, and Lake Tamarisk). The Townsite, which is located directly south of the proposed landfill site, currently has a population of approximately 220 residents. The existing residents at the Townsite are employed at the community correctional facility or in support of the limited mining-related activities at the Eagle Mountain Mine. Because of the low number of existing residents, this viewer group has a moderate sensitivity to the Project vicinity's visual environment.

Residential viewer groups are also located in the communities of Desert Center and Lake Tamarisk, located approximately 8 and 12 miles south of the Project site, respectively. Because of the low residential population of Lake Tamarisk (see Section 3.8), viewer sensitivity is rated moderate. Viewer sensitivity from Desert Center is described below in the context of views from Interstate 10.

Motorists (Other Views from Interstate 10 and Highway 177). Motorists traveling on Interstate 10 in the vicinity of Desert Center and Highway 177 represent the largest number of viewers in the Project vicinity. On the basis of 1994 average daily traffic volumes, approximately 13,500 and 1,500 vehicles travel along Interstate 10 and Highway 177, respectively, passing the general vicinity of the Project. According to the County of Riverside Comprehensive General Plan, the portion of Interstate 10 that passes by the Project vicinity is designated as an Eligible County Scenic Highway (County of Riverside Planning Department, 1984). This portion of Interstate 10, however, is not eligible to be designated as a State Scenic Highway (Babich, T. Telephone Communication with Nakano, Caltrans,

1995). Viewer sensitivity is moderate for motorists traveling on Highway 177 because of the relatively high volume of users and the generally scenic nature of the surroundings. Viewer sensitivity is rated high from Interstate 10 because of this roadway's larger volume of traffic and its designation as an Eligible County Scenic Highway.

Step 2: Visual Resource Classification for the Project Site. The second step in the visual resource methodology is applying VRCs to provide a framework for characterizing the relative value of the visual resources of the Project site. These VRCs are described below and shown in Figure 3.10-3. Additional discussion is also in Appendix I of this EIS/EIR. Factors considered in determining the VRC for the Project site are a synthesis of scenic quality, viewer sensitivity, and distance zones. There are four VRCs ranging from I through IV. VRC I is applied to areas with the highest sensitivity and visual quality, and is reserved for largely undisturbed natural areas such as wilderness or designated scenic areas. VRC IV is applied to areas that have the lowest visual sensitivity and visual quality. A rehabilitation classification is also available in the BLM system. It applies to areas visually disturbed to the extent that rehabilitation is appropriate.

The Project site falls within two scenic quality landscape units, the East Pit and Townsite (O-1) and the Eagle Mountains (M-1). The East Pit can be viewed only from within the existing mine site or from ridges in the nearby Eagle Mountains. In consideration of the amount of extensive disturbance at the East Pit, the scenic quality of this portion of the site is low (Class C); only a small portion along the northwestern edge of the site within the lower slopes of the Eagle Mountains is designated with moderate scenic quality (Class B). Sensitivity levels from the eight KOPs range from moderate (e.g., at the Eagle Mountain Townsite) to high (at areas within the JTNP). The Project site lies mostly within the background distance zones of the moderate to highly sensitive KOPs, except for views from the Eagle Mountains and the Townsite where it is within the foreground/middleground. Using the BLM Visual Resource Inventory Classes Matrix (see Table I-2 in Appendix I), the combination of these three factors results in predominantly VRC Class IV and III designations at the Project site. The VRCs are summarized in Table 3.10-3.

The majority of the East Pit area of the Project site, where the scenic quality has been significantly reduced by extensive former mining operations, falls largely within VRC IV. A VRC of III is indicated for views from the Eagle Mountains and Townsite because of their high sensitivity and proximity to the mine site. As the result of previous mining activities, however, the character of the mine is disturbed to the extent that it contrasts with the natural character of the area. For this reason, the mine is classified as VRC IV, rather than as VRC III.

The VRC designation for the portion of the Project site located within the Eagle Mountains landscape unit varies from II to IV, with an average of VRC III. Because of the proximity and sensitivity of views from the Eagle Mountains and Townsite, VRC II is assigned to this area. These areas would be most sensitive to changes to the Project site that increased the visual contrast compared to the natural character of the area.

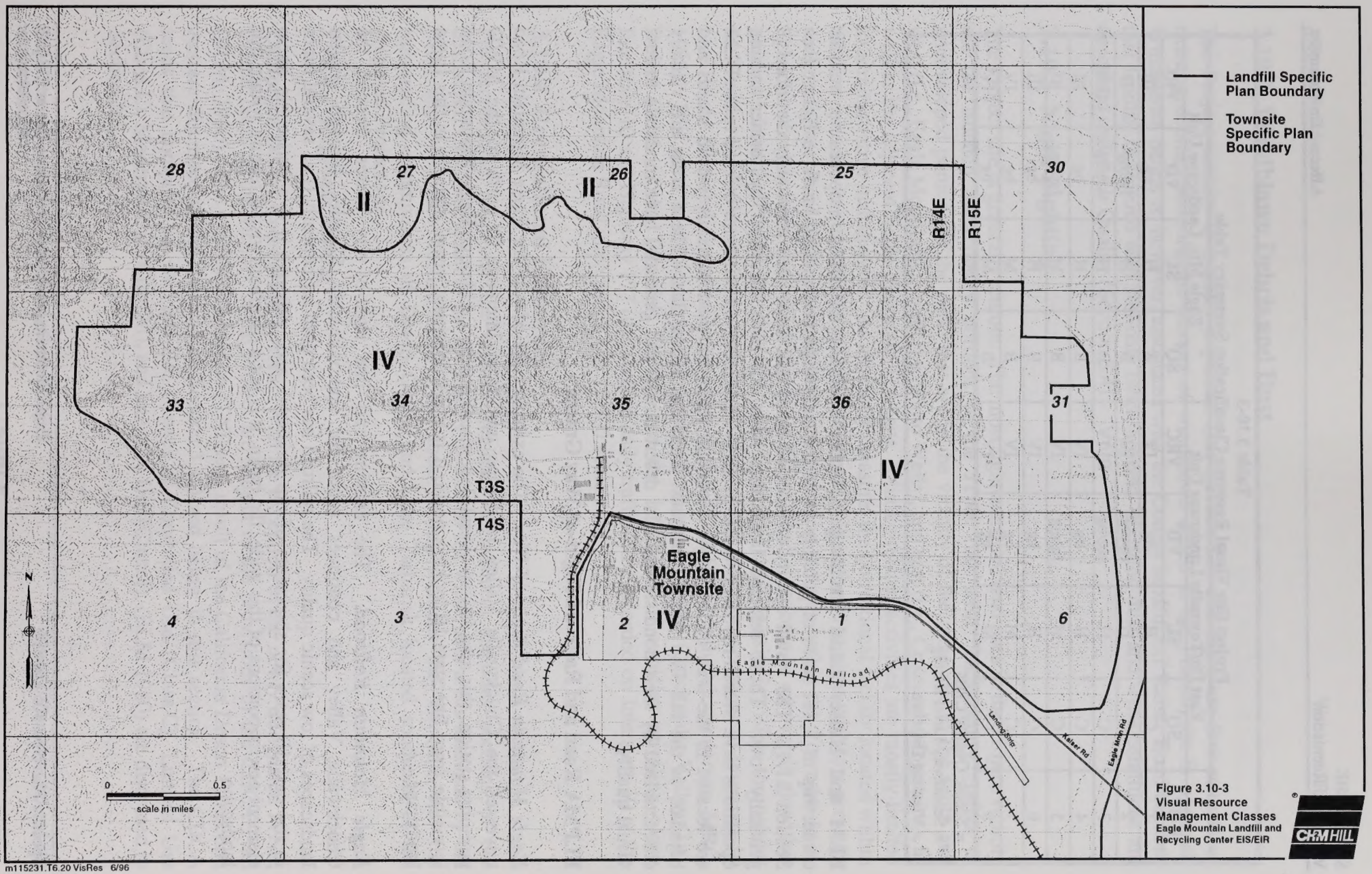


Figure 3.10-3
Visual Resource Management Classes
Eagle Mountain Landfill and Recycling Center EIS/EIR

m115231.T6.20 VisRes 6/96

Table 3.10-3
Project Site Visual Resource Classification Summary Table

	East Pit/Townsite Landscape Unit				Eagle Mts. Landscape Unit			
KOP	SQ[1]	SL[2]	VD[3]	VRC	SQ[1]	SL[2]	VD[3]	VRC
1	C	H	bg	IV	B	H	bg	III
2	C	H	fg/mg	III	B	H	fg/mg	II
3	C	H	mg/bg	III/IV	B	H	mg/bg	II/III
4	C	H	bg	IV	B	H	bg	III
5	C	M	fg/mg	IV	B	M	fg/mg	III
6	C	H	bg	IV	B	H	bg	III
7	C	M	bg	IV	B	M	bg	IV
8	C	M	bg	IV	B	M	bg	IV

[1] = Scenic Quality Class
[2] = Sensitivity Level Rating
[3] = Viewing Distance

BLM and Kaiser Land Exchange. Under FLPMA, the BLM proposes to transfer ownership of 3,481 acres of publicly owned, mostly disturbed mining lands to Kaiser (see Section 2.1.1). The visual quality of selected lands that have been previously disturbed is generally low. Those selected lands that have not been disturbed by former mining operations have overall moderate visual quality. The Kaiser-owned lands offered to the BLM are located in the area of the Eagle Mountain Railroad, predominantly within basins and bajadas, as the rail line travels northeast from the Salton Sea. These areas are visually characterized by their nondisturbed, flat desert terrain and generally have moderate to low visual quality.

FLPMA Road and Railroad Right-of-Way Grants.

Eagle Mountain Road Right-of-Way. The existing right-of-way for Eagle Mountain Road traverses the Chuckwalla Valley landscape unit from Interstate 10 north to the MWD pumping station; this area has an overall low visual quality. Although Eagle Mountain Road is visible from Interstate 10 looking north, it is not a dominant visual element in this basin landscape.

Eagle Mountain Railroad. The existing rail line right-of-way passes through the Chuckwalla Valley and continues south for approximately 52 miles through similar landscapes of low scenic quality. The railroad has been used infrequently (i.e., several times in the past 10 years for shipments of ore products), and, although it is a noticeable linear element across portions of this wide, flat basin, it is not a dominant visual feature within this landscape.

3.10.2 Windblown Debris and Dust

The Project vicinity is sparsely populated (see Section 3.8) and there are few sources of existing debris; therefore, the amount of windblown debris at the Project site is nominal. Windblown debris is, however, associated with the County landfill off Kaiser Road because that landfill is covered with soil only twice a week. Existing dust and wind conditions are described under Air Quality (Section 3.4).

3.10.3 Night Lighting

The Project site is generally remote. The most light-sensitive land uses in the Project vicinity are the isolated, backcountry portions of the JTNP (the term "backcountry" refers to undeveloped portions of the park) that are in the vicinity of the mine site to the south and west (i.e., Eagle Mountains), north (i.e., Pinto Wells), and east (i.e., Coxcomb Mountains), as well as the adjacent Eagle Mountain Townsite. Mining-related activities are mostly limited to administrative management. As a security measure, the correctional facility located within the Townsite and its surrounding grounds are intensely illuminated at night with low-pressure sodium lights. In addition, street lighting, other existing features within the Townsite (e.g., lights from residences), and vehicle lights on Kaiser Road contribute to an overall glow that emanates from the Project vicinity. The night lighting of the Townsite is visible throughout the Chuckwalla Valley, as far as 30 to 40 miles in the distance along portions of Interstate 10 near Blythe (Personal Communication James Irish, CH2M HILL, with Orlo Anderson, MRC, 1995). This glow is supplemented by existing development in the Chuckwalla Valley (i.e., Desert Center, Lake Tamarisk, Blythe) and the headlights of vehicles traveling along Interstate 10 and Highway 177 (the average daily traffic flow recorded on Interstate 10 at the Eagle Mountain Road interchange was 13,500 vehicles).

3.10.4 Recreational Resources

For recreational resources, the affected regional environment includes portions of the designated CDCA adjacent to the proposed Project and the wilderness areas managed by the BLM and NPS (see Section 3.11). The local setting includes the Townsite and the surrounding communities of Desert Center and Lake Tamarisk located southeast of the proposed Project site.

3.10.4.1 Regional Setting

California Desert Conservation Area. With the exception of the newly designated JTNP, federal lands in the vicinity of the Project are subject to the provisions of the CDCA Plan (BLM, 1980). The new lands added to JTNP as a result of the California Desert Protection Act are discussed within the act (see Section 3.11) and below in this section. The CDCA lands that comprise the Multiple-Use Classes of Controlled Use (Class C), Limited Use (Class L), Moderate Use (Class M), and Intensive Use (Class I), (BLM 1980) are discussed in Section 3.5.

As discussed in Section 3.5, Land Use, three of these four multiple land use categories occur in the general vicinity of the proposed Project site. The Project site is immediately bounded by Class I lands to the north and west and by Class M lands to the south and east. Recreational uses appropriate to and suitable for Class M areas encompass a wide range of activities that generally involve moderate and high user densities. Recreational opportunities appropriate for Class M areas (BLM, 1980) include:

- Backpacking
- Primitive, unimproved site camping
- Cultural resource observation
- Collecting nonprotected materials
- Hiking
- Horseback riding
- Nature study/observation
- Photography/painting
- Rock climbing
- Sand sailing on dry lakes
- Spelunking
- Rockhounding
- Hunting
- Noncompetitive vehicle touring on designated roads, trails, and ways
- Organized motorized vehicle events on existing roads and ways

Recreational uses appropriate to and suitable for Class I areas encompass activities that generally involve high user densities. Recreational opportunities appropriate for Class I areas include all of the above, as well as organized motor vehicle events in areas designated as "open" on the BLM motorized vehicle plan. Recreational uses (consisting primarily of vehicle-dependent activities such as hunting and off-highway vehicle touring) are low (BLM, California Statewide Wilderness Study Report, 1991).

Joshua Tree National Park. JTNP comprises approximately 794,000 acres in the counties of Riverside and San Bernardino. More than 630,000 acres of the park are designated wilderness areas. The Eagle Mountains to the southwest, which were identified as a Class C area under the BLM's administration in the previous EIR, now are included within the newly designated JTNP and subject to the management provisions of the NPS as specified in NPS 77 (NPS, 1995b), among other guidance documents. Also encompassed within the JTNP are the Coxcomb Mountains to the north and east of the proposed Project site. The Coxcombs were identified as a Class L area in the previous EIR. On the basis of communications during the agency scoping meetings with NPS and throughout the preparation of this EIS/EIR, it is anticipated that much of the new JTNP lands will be designated as Primitive Zone wilderness areas (see Section 3.11 for additional discussion of the preliminary zoning categories for JTNP). Some of these newly added lands (i.e., eastern foothills of Eagle Mountains and central portions of the Coxcomb Mountains) are, however,

designated as nonwilderness areas on DOI maps prepared in conjunction with the passage of the California Desert Protection Act (see Section 3.11). (Section 3.11 and 4.11 discuss wilderness management issues, including aspects of NPS management of wilderness areas.) The NPS estimates that approximately 1.2 million people visit JTNP each year and anticipate that this visitation will increase to approximately 4 million visitors annually (NPS, 1995). Because of the excessive heat in the summer months, most of these visits occur in the nonsummer months, with the peak visitor period occurring between February and April. During this period, the desert blooms are a major visitor attraction (NPS, 1995). Only nonmotorized types of recreational use would be allowed to continue in Pinto Basin. Consumptive recreational pursuits such as rock collecting, hunting, and trapping would not be allowed on NPS parcels, but the impacts would be considered negligible based on low current and projected visitor use in the lands adjacent to the Project site (BLM, California Statewide Wilderness Study Report, 1991).

Major recreational areas of the JTNP are shown in Figure 3.10-4. Most visitors enter from either the Joshua Tree entrance (West entrance via Quail Springs Road) or from Interstate 10 at the Cottonwood Canyon Road (south entrance). The western entrance is located more than 40 miles from the proposed Project site, and the southern entrance is about 30 miles from the Project site. The northern entrance at Utah Trail along the Twentynine Palms Highway is used less frequently to gain access to the park than are the other two entrances. This entrance is about 40 miles from the Project site. The Pinto Basin Road is the main paved road that traverses the park (see Figure 3.10-4), connecting the northern headquarters at the Oasis Visitor Center to the Southern Cottonwood Visitor Center. The recently completed General Management Plan (GMP) for JTNP (NPS, 1995c) states that substantial expansions and/or renovations are planned for the visitor information facilities at these entrance points (see Section 5). Other major, planned renovations are widening roadways leading to high visitor use areas in the park (NPS, 1995).

The majority of designated visitor facilities and recreational areas are located in the northwestern portion of JTNP (see Figure 3.10-4). The GMP for JTNP delineates visitor activities into the following three categories based on visitor experience:

- Frontcountry. The frontcountry experience focuses on the Mojave Desert area in the northwestern part of JTNP. This area contains the most frequently used park resources, such as Keys View and Hidden Valley, that are easily accessible by car along paved roads (see Figure 3.10-4). The Oasis Visitor Center is located in this area.

- Threshold. The threshold experience (i.e., nonwilderness areas that provide threshold access to wilderness areas) is targeted in nonwilderness areas accessible along both two- and four-wheel-drive unpaved roads and along 15 hiking trails that vary from 2 to 10 miles in length. Examples of areas targeted for the threshold experience are Geology Tour Road and the Queen Valley Loop.

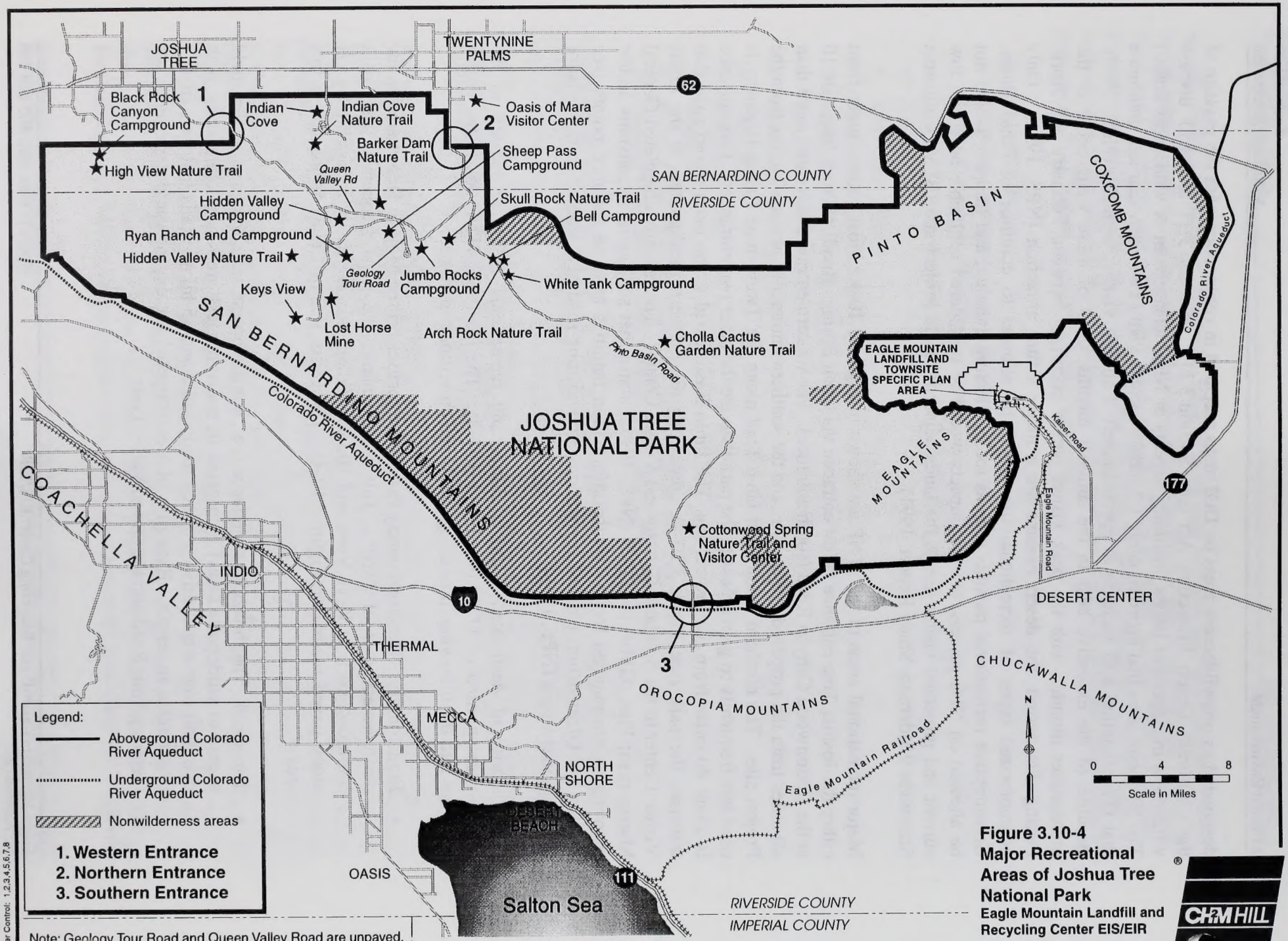


Figure 3.10-4
Major Recreational Areas of Joshua Tree National Park
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2MHILL

Layer Control: 1,2,3,4,5,6,7,8

- Backcountry. The backcountry experience is targeted for visitors to JTNP's designated wilderness areas in the park, comprising approximately 593,000 acres. (The term "backcountry" refers to primitive, undeveloped portions of parks. JTNP is preparing a backcountry management plan to determine recreational and other uses in the areas added to the park by the California Desert Protection Act (see Section 3.11).

According to JTNP's GMP, the main recreational uses in JTNP are studying and viewing scenery, plants, and wildlife. The next most popular activities are general recreational pursuits (i.e., hiking, picnicking, camping, rock scrambling) and viewing and studying cultural sites. Rock climbers are also active at JTNP and they, in turn, attract other visitors who watch their activities. JTNP has also become more frequently used for horseback riding (Personal Communication Christine Roberts, CH2M HILL, with Ernest Quintana, Joshua Tree National Park, July 1995). The areas of greatest visitation are Jumbo Rocks, Cholla Cactus Garden, Hidden Valley, Cottonwood Springs, Oasis Visitor Center, and Keys View, all of which are more than 30 miles from the proposed Project site (NPS, 1995). These features are shown in Figure 3.10-4.

The Pinto Basin Road traverses the desert biomes within JTNP. As the elevation drops approximately 2,000 feet, the Mojave Desert meets the lower Colorado Desert. Although the Eagle Mountains are highly visible to the east (approximately 30 miles) from Pinto Basin Road as it bisects JTNP, the proposed Project site is shielded from view because it borders the eastern reaches of the Eagle Mountains (see Section 3.10.1 and 4.10.1). From the Pinto Basin Road, visitors can gain access to backcountry recreational opportunities, including rockclimbing, hiking, and four-wheel-drive vehicle use. Directly off the Pinto Basin Road is Old Dale Road, a dirt road that provides four-wheel-drive passage to the north across Pinto Basin and up into the Pinto Mountains outside of JTNP's northern border. This road provides scenic views of the basin and surrounding mountains. Black Eagle Mine Road, which travels east from Pinto Basin Road, is also a four-wheel-drive nonwilderness road that bisects the wilderness areas leading to the western foothills of the Eagle Mountains. This road leads to old mining claims (e.g., Mission Sweet, Cactus, and Rainbow's End mines) outside the park's boundaries and ultimately to the Eagle Mountain Mine property.

Most of JTNP away from road corridors is designated wilderness area. Areas added to JTNP under the provisions of the DPA (see Section 3.11) include a nonwilderness buffer zone within the park borders that accommodates existing features, such as transmission lines or the Colorado River Aqueduct. With the exception of several roads allowing vehicles (e.g., Old Dale Road, Black Eagle Mine Road), no vehicular access is allowed in wilderness areas. The visual range and line of sight are great and because of this, trails are not delineated and marked.

Pinto Wash is a natural drainage that parallels the north face of the Eagle Mountains and can be used as a hiking route. Hikers can traverse this route east and continue on to the Coxcomb Mountains. The length of stay is contingent on the amount of water an individual can carry into this area (i.e., there are no visitor facilities or potable water sources in this area and motorized vehicles are prohibited). Hiking in lower, open areas, such as the Pinto Basin,

during the summer months is not recommended because temperatures in mid-summer often exceed 100°F. In addition, thunderstorms in July and August can result in flash floods. In cooler months, wind velocities can exceed 25 to 30 miles per hour and routes that are more sheltered than the Pinto Basin are recommended (Furbush, 1992). The relative rugged landscape of the Coxcomb Mountains limits access to the northern and central portions. A four-wheel-drive road provides northern access to an unmarked wash that can be used as a trail into the Coxcombs. More commonly, backpackers seek out the sheltered canyons at the base of the mountains. Access to these areas is more readily available from Pinto Basin.

3.10.4.2 Local Setting

As detailed in Section 3.5, Land Use, the Eagle Mountain Townsite will be renovated according to the Specific Plan for the Townsite (see Chapter 2), which includes recreational area set asides. This approximately 168-acre area (Townsite Planning Area 12 [see Section 2.1.3.2]) historically contained recreational uses and has generally remained open space. It is currently bisected by access roads, utility lines, and the Eagle Mountain Railroad. This area is undeveloped and will be designated as open space/recreational.

The nearby community of Lake Tamarisk supports recreational facilities, including a 9-hole golf course. Desert Center also has facilities to serve recreational vehicles. South of Desert Center, the Chuckwalla Mountains have been rated high as a recreational resource. The primary recreational activities include hunting, camping, prospecting, rock collecting, four-wheel-drive vehicle access, nature study, and hiking.

3.11 Wilderness

This section establishes the existing conditions for wilderness areas managed by the Bureau of Land Management (BLM) and the National Park Service (NPS) in the vicinity of the proposed Project site and discusses: (1) the definition of wilderness; (2) a physical description of the existing designated wilderness areas and other adjacent land uses in the vicinity of the proposed Project; and (3) the legislative context and associated management responsibilities of the BLM and NPS for wilderness areas. The closest wilderness in the vicinity of the Project is Joshua Tree National Park, which is within 1.5 miles of the Project site. Potential impacts to wilderness and the State Superior Court action pertaining to the discussion of wilderness in the previous environmental impact report (EIR) are discussed in Section 4.11.

The management policies and guidelines discussed in this section pertain only to federal lands managed by the BLM or the NPS; they do not apply to the proposed Project, which is located outside the boundaries of Joshua Tree National Park (JTNP). The federal guidelines for the BLM and the NPS are presented herein, however, to establish the mandates under which the potentially affected federal land management agencies must manage wilderness areas. Because none of the acreage comprising the proposed Project area (i.e., neither the Eagle Mountain Landfill nor the Townsite) is within wilderness areas administered by the BLM or NPS, this section establishes the existing conditions for evaluating potential impacts to wilderness areas managed by the two U.S. Department of Interior agencies.

Because other sections of this environmental impact statement/environmental impact report (EIS/EIR) discuss and evaluate resource categories (such as air quality, visual, noise, biological resources, and water resources) that address both wilderness and nonwilderness issues, the discussion of wilderness in this section is provided as a consolidated summary of: (1) the elements of the resource categories in Chapter 3 that comprise the existing conditions of wilderness; and (2) the legislative and management context of the two federal land management agencies (i.e., the BLM and NPS) responsible for managing designated wilderness areas in the vicinity of the proposed Project.

The approach to describing existing conditions and assessing potential impacts for wilderness in this EIS/EIR is based on the NPS's approach to managing natural resources contained in NPS's *Natural Resources Management Guideline, 1991* (NPS-77). This document presents guidance for managing and assessing compliance responsibilities for a variety of resource categories and resource uses in federal lands administered by the NPS. To present information in a concise way, NPS-77 discusses different resource categories (e.g., air, vegetation) in separate sections. NPS recognizes, however, that "certain important themes, such as biodiversity and ecosystem management...underlie and cut across many sections," and that this approach adequately can address the traditional resource categories (NPS 1991, Chapter 1, p. 5). The NPS's approach to describing and assessing management practices contains a separate discussion of resource uses, including backcountry management in wilderness areas, that references applicable guidance documents for backcountry wilderness issues.

3.11.1 Court Ruling

Although specifically addressing the "wilderness experience" is not addressed by either the National Environmental Policy Act (NEPA) or the California Environmental Quality Act (CEQA), NEPA does require the examination of "economic or social effects" when "an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated." (40 C.F.R. §1508.14). In addition to the various categories discussed throughout this EIS/EIR that define the wilderness experience (e.g., air quality, biological resources), wilderness is discussed in a separate section in this EIS/EIR because of the Superior Court ruling on the previous EIR for this issue, which specifies analysis of the wilderness experience in JTNP.

3.11.2 Coordination with Bureau of Land Management and National Park Service

As discussed in Section 3.11.7, the management of wilderness areas is based on guidance prepared by the administering federal agency and is interpreted and implemented by individual park-unit and wilderness-area managers. To ensure consideration of appropriate and applicable agency guidelines, staff from both the BLM and the NPS, including wilderness managers, were involved in the preparation and review of this section. Separate agency scoping sessions were held with the cooperating agency, NPS, to address specific wilderness issues. In addition, representatives from the Aldo Leopold Wilderness Research Institute were consulted (Telephone communication. Christine Roberts with Alan E. Watson and David R. Spildie, September 6, 1995) and numerous journal articles were reviewed (see Section 9, References Cited).

3.11.3 Definition of Wilderness

Wilderness is defined in Section 2 (c) of the Wilderness Act of 1964 (16 U.S.C. 1131-1136—also see Section 3.11.6.4 below for a detailed discussion of the Act's provisions) as "an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain." The Act further defines wilderness as "an area of undeveloped Federal land retaining its primeval character, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable, (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation, (3) has at least 5,000 acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition, and (4) may also contain ecological, geological or other features of scientific, educational, scenic, or historical value, (16 U.S.C. 1131)." The areas designated as wilderness under the Act are to be administered "for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness." (16 U.S.C. Section 113[a] *et seq;* 78 Stat. 891[a]).

Since the passage of the Wilderness Act more than 30 years ago, federal agencies have prepared guidance for managers to interpret and implement the broad provisions of the act, and numerous research articles have been published to define and interpret the features that comprise wilderness characteristics. As a result of these efforts, wilderness can generally be discussed in two ways. The first is as a social element (or "wilderness experience") that focuses on wilderness as the personal experience of individuals in a setting of solitude. The second category is an ecological approach (or "wilderness as a resource") that focuses on managing wilderness as a distinct resource with inseparable parts (i.e., individual resources of air, water, biological resources that interact as a single ecological unit). These sources are listed in Section 9, References Cited. Unlike "wilderness as a resource," which can be measured according to objective standards, the quality of the "wilderness experience" depends on subjective personal assessments that reflect varying degrees of sensitivity to particular impacts (e.g., noise) in a wilderness setting. Wilderness resources can be assessed as a physical component of the landscape. The human response to identifying and evaluating the "wilderness experience," however, is not readily quantifiable, because it depends on individual interpretations of qualitative concepts, such as natural peace and solitude.

3.11.4 Wilderness Management Authorities (Bureau of Land Management and National Park Service)

The two federal agencies with wilderness management responsibilities in the vicinity of the proposed project are the BLM and the NPS. The BLM's authority to manage wilderness areas is provided in the Federal Land Policy and Management Act of 1976 (FLPMA, P.L. 94-579, 90 Stat. 2743, 43 U.S.C. 1701 *et seq.*), the Wilderness Act of 1964 (16 U.S.C. 1131 *et seq.*), the California Desert Protection Act of 1994 (CDPA, P.L. 103-433), and in the BLM's associated implementing regulations and guidance for FLPMA. The NPS's authorities are derived from the statutory provisions of the NPS Organic Act of 1916 (16 U.S.C. 1 *et seq.*), the Wilderness Act of 1964 (16 U.S.C. 1131 *et seq.*), the California Desert Protection Act of 1994 (CDPA, P.L. 103-433), the General Authorities Act, as amended by the Redwood National Park Expansion Act of 1978 (16 U.S.C. §19-1), and legislation that establishes individual park units. JTNM was created as a unit of the national park system on August 10, 1936 (Presidential Proclamation No. 2193, 50 Stat. 1760). The California Desert Protection Act of 1994 (see Section 3.11.6.5) changed the monument's status to a national park and transferred lands from the BLM to NPS for management. The acts and other authorities for BLM and NPS to manage wilderness areas are further discussed in Section 3.11.6.

3.11.5 Physical Setting

This section presents a brief summary of the existing federal lands in the vicinity of the proposed Project that are managed by the BLM and NPS as wilderness areas. It also summarizes other existing physical features of the general Project area. Section 3.5, Land Use, also contains a discussion of land uses near the proposed Project.

3.11.5.1 Wilderness Areas

The federal lands administered by the BLM and NPS in the vicinity of the proposed Project are shown in Figure 3.11-1, which depicts the BLM wilderness areas in the immediate area (i.e., within 25 miles) of the proposed Project and the national parks and preserves established under the Desert Protection Act. These areas are within the California Desert Conservation Area (CDCA). The CDCA comprised the geographical extent of the BLM's 15-year study process to inventory and assess the wilderness characteristics of 209 areas (known as Wilderness Study Areas, or WSAs) covering 7.1 million acres in California. The intent of the study process was to evaluate and recommend to Congress those areas that would be added to the National Wilderness Preservation System to be managed according to applicable federal policies for managing wilderness (BLM, 1991). In addition to assessing WSAs for potential administration by the BLM, the NPS participated in identifying those WSAs that would be added to JTNM and Death Valley National Monument.

Bureau of Land Management. The following four wilderness areas in the vicinity of the proposed Project and managed by the BLM are discussed below: (1) Palen/McCoy Wilderness; (2) Chuckwalla Mountains Wilderness; (3) Orocopia Mountains Wilderness; and (4) Mecca Hills Wilderness. These four wilderness areas are those closest to the proposed Project site.

Palen/McCoy Wilderness. The Palen/McCoy Wilderness, which is shown in Figure 3.11-2, is located in the County of Riverside approximately 15 miles east of the Project site and Desert Center, and 25 miles west of Blythe. It comprises approximately 270,629 acres, most of which are administered by the BLM (limited acreage of state-administered lands are also within the area). The area is accessible by four-wheel drive vehicles only. From the north, access can be gained via State Highway 62; and from the south, the area is accessible by Interstate 10 via the Midland Road. The Coxcomb Mountains (formerly CDCA WSA 328 and now part of JTNP) block visibility of the Project site from this wilderness area. Within Palen/McCoy, five distinct mountain ranges (i.e., the Granite, McCoy, Palen, Little Maria, and Arica Mountains) are separated by broad sloping bajadas (i.e., areas where two or more alluvial fans merge). The desert wash woodland in this wilderness area supports burro deer, coyote, bobcat, gray fox, and mountain lion. The landscape pattern is characterized by desert pavement, bajadas, interior valleys, canyons, dense ironwood forests, canyons, and rugged peaks.

Chuckwalla Mountains Wilderness. The Chuckwalla Mountains Wilderness is located in the County of Riverside approximately 15 miles south of the Project site (directly south of Desert Center and Interstate 10, and 40 miles west of Blythe). This wilderness, which is shown in Figure 3.11-3, comprises approximately 80,770 acres, most of which are administered by the BLM. Access to the area from the north is gained via Interstate 10 at Corn Springs and DuPont Roads. Western and southern accesses are via Red Cloud Road and Bradshaw Trail, respectively. The landscape is characterized by steep-walled canyons, inland valleys, numerous washes, isolated rock outcrops, and vast desert expanses. Wildlife

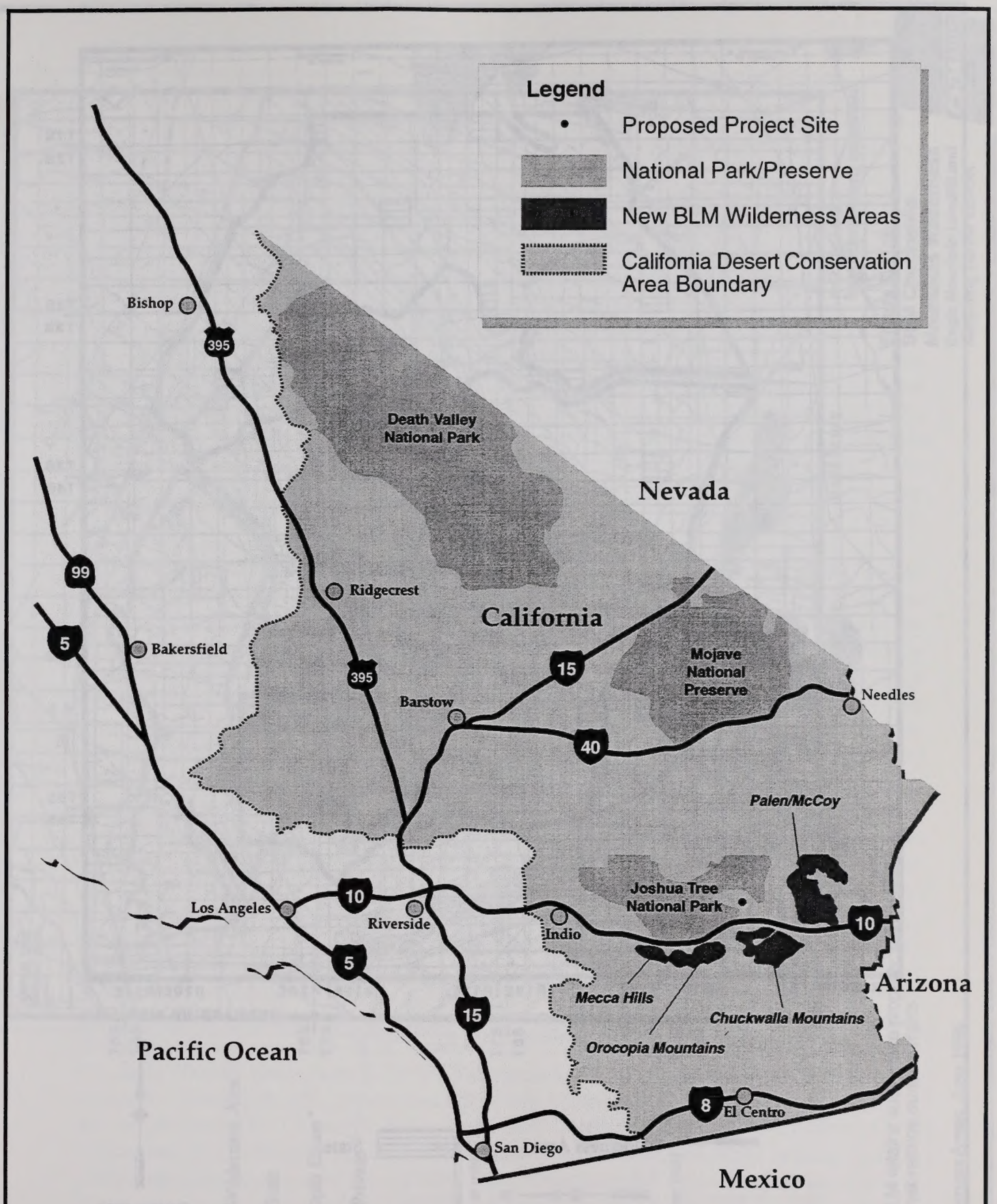


Figure 3.11-1
California Desert Conservation Area: Context for BLM and NPS Management of Federal Lands
Eagle Mountain Landfill and Recycling Center EIS/EIR

Source:
BLM, California Statewide Wilderness Study Report, 1991

CH2M HILL

m115231.T6.20 wilder 6/96

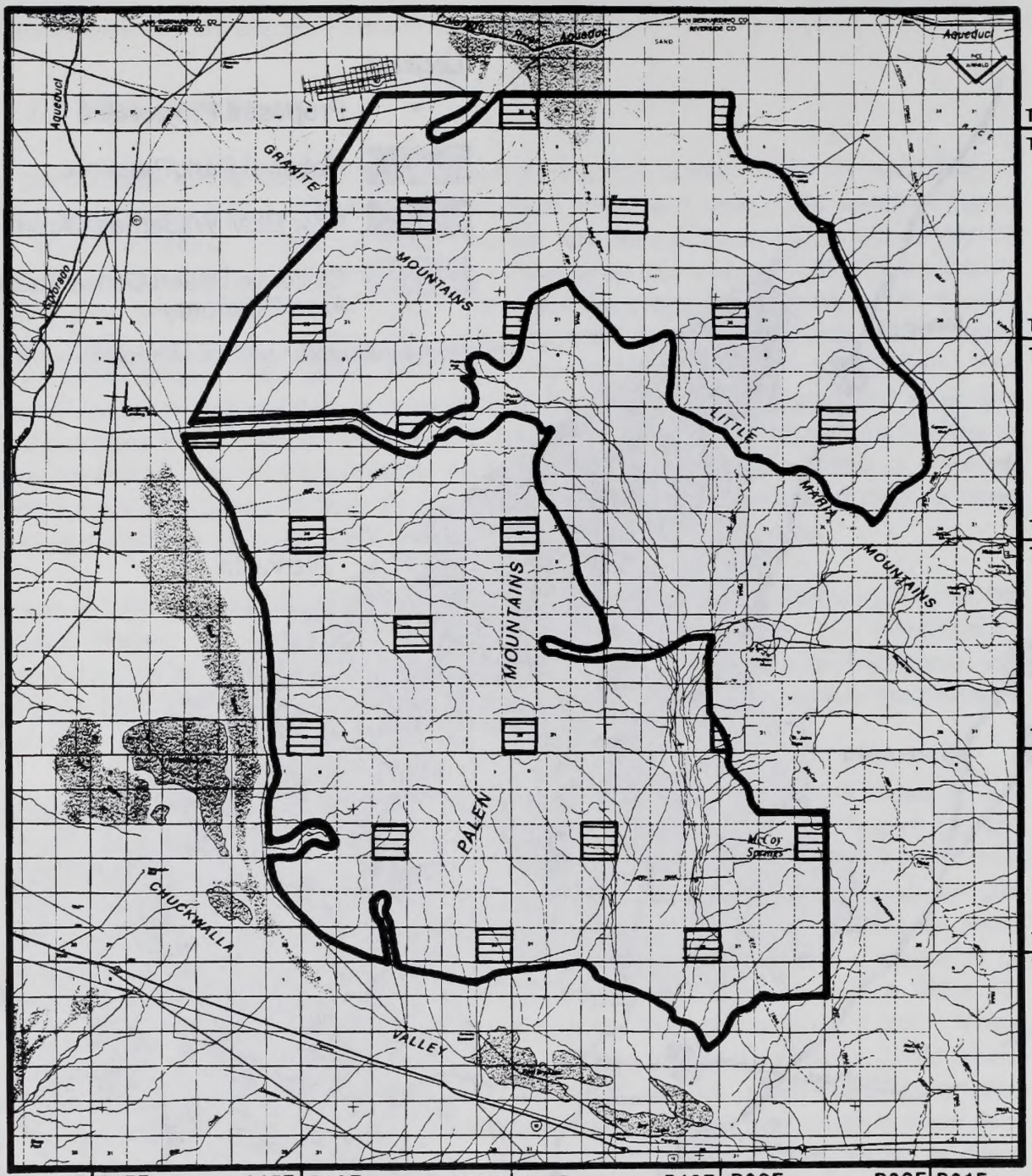
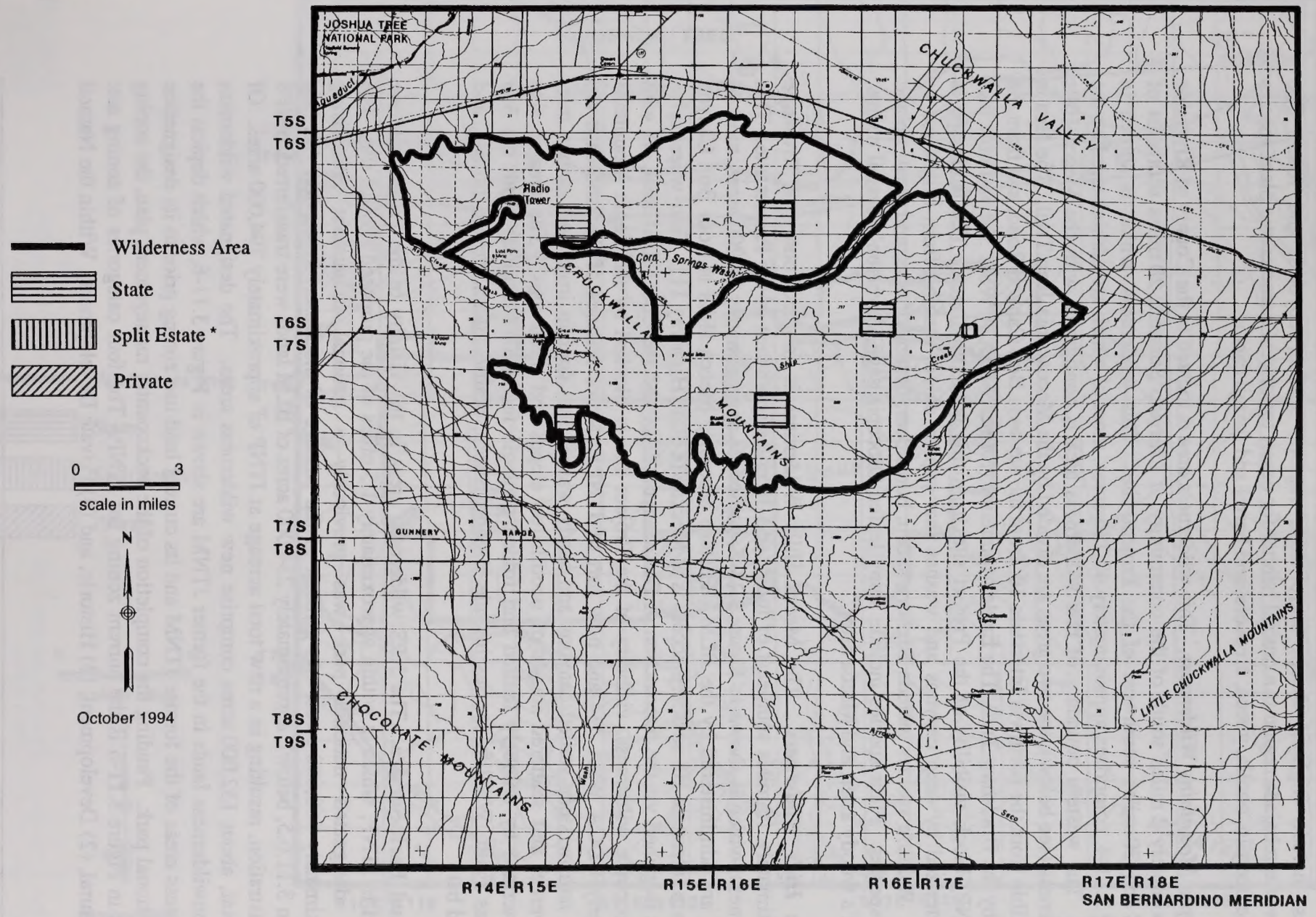


Figure 3.11-2
BLM Palen/McCoy Wilderness
Eagle Mountain Landfill and Recycling Center EIS/EIR

Source: BLM Wilderness Areas, June 1995

CH2MHILL

m115231.T6.20 BLMpaln 6/96



* Indicates that BLM retains subsurface property rights and private owner retains surface rights

Source: BLM Wilderness Areas, June 1995

Figure 3.11-3
BLM Chuckwalla Mountains Wilderness
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2MHILL

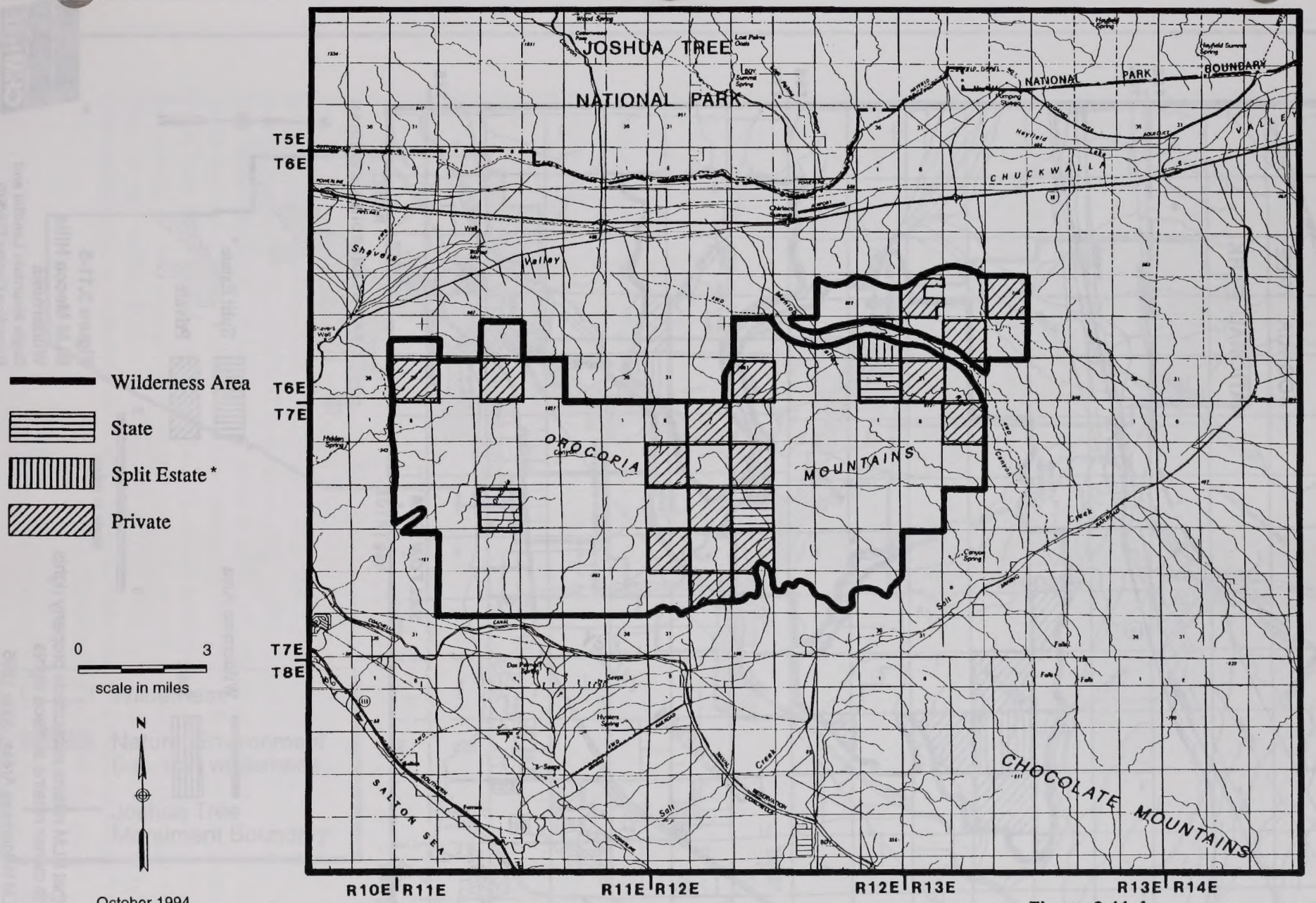
m115231.T6.20 BLMchck 6/96

species include Bighorn sheep, burro deer, raptors, snakes, coyotes, and fox. The southwestern bajada region is a crucial habitat for desert tortoise. Characteristic plant species include ocotillo, cholla, yucca, creosote, and barrel and foxtail cactus.

Orocopia Mountains Wilderness. This wilderness area is located in the County of Riverside approximately 2 miles south of the community of Chiriaco Summit, 20 miles southeast of Indio, and 20 miles southwest of the Project site. This wilderness, which is shown in Figure 3.11-4, comprises approximately 40,735 acres, most of which are administered by the BLM. The western boundary of this wilderness area is contiguous with the Mecca Hills Wilderness (see below); the two areas are divided by the Meccacopia Jeep Trail. The area is accessible from the north via Interstate 10, from the west via Box Canyon Road, and from the south by the Bradshaw Trail. The Eagle Mountains (formerly CDCA WSA 334 and now part of JTNP) block visibility of the Project site from this wilderness area. The landscape is characterized by deep canyons and washes that expose colors ranging from bright red to black. Wildlife species include Bighorn sheep, burro deer, desert tortoise, and small upland game species. Plant species include spiny-leafed Orocopia sage, Alverson's foxtail cactus, Orcutt's woody aster, and Mecca aster.

Mecca Hills Wilderness. The Mecca Hills Wilderness is in the County of Riverside approximately 15 miles southeast of Indio, and 30 miles southwest of the Project site. This wilderness, which is shown in Figure 3.11-5, comprises approximately 24,200 acres, most of which are administered by the BLM. Eastern access to Mecca Hills is from Box Canyon Road via Interstate 10; southern access is at Mecca via State Highway 111. Four-wheel drive access is gained via the intersection of Box Canyon Road and the Coachella Canal. As with the Orocopia wilderness, visibility of the Project site is blocked by the Eagle Mountains (formerly CDCA WSA 334 and now part of JTNP). Major features of the landscape are small, narrow steep-walled canyons and sandy washes that contain ironwood, smoke tree, palo verde, and scattered stands of ocotillo on slopes and mesa tops. The area is also characterized by uniquely faulted and folded geologic formations resulting from the San Andreas Fault. Wildlife species include Bighorn sheep, prairie falcon, desert tortoise, and spotted bat.

National Park Service. The NPS wilderness areas in the vicinity of the Project site are located in JTNP, which is within approximately 1.5 miles of the proposed Project site. The newly designated national park was previously a national monument comprising approximately 560,000 acres. As a result of the passage of the Desert Protection Act (see Section 3.11.6.5, below), approximately 234,000 acres of BLM lands were transferred to NPS administration, resulting in a new total acreage at JTNP of approximately 794,000 acres. Of this total, about 132,000 acres comprise new wilderness areas. The designated wilderness and nonwilderness lands in the former JTNM are shown in Figure 3.11-6, which depicts the wilderness areas of the former JTNM and its current land use zoning prior to its designation as a national park. Pending the completion of the backcountry management plan, the zoning shown in Figure 3.11-6 is the current zoning for JTNP. The four categories of zoning are: (1) Natural, (2) Development, (3) Historic, and (4) Private Development. Within the Natural



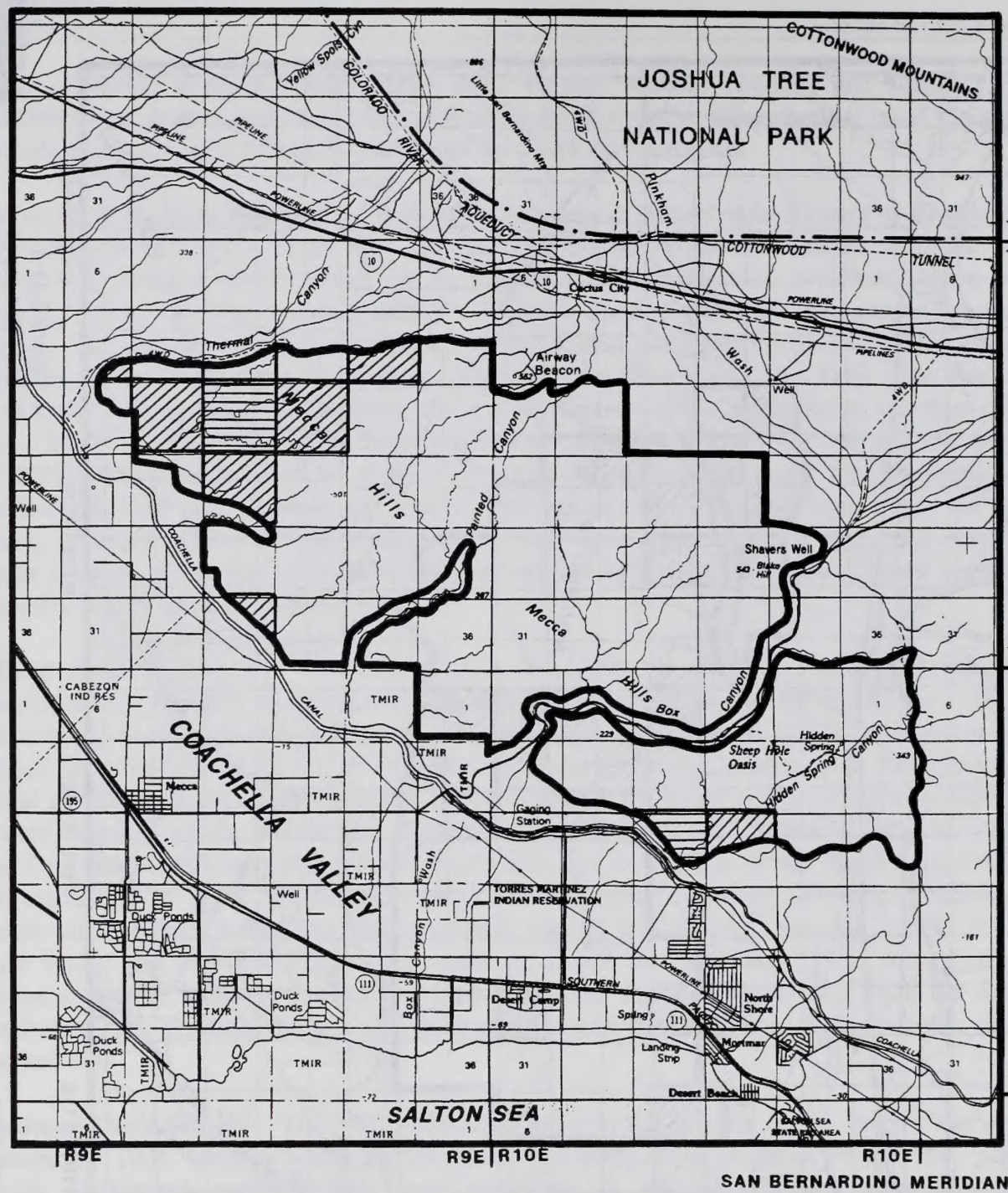
October 1994

* Indicates that BLM retains subsurface property rights and private owner retains surface rights

Source: BLM Wilderness Areas, June 1995

Figure 3.11-4
BLM Orocopia Mountains Wilderness
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL



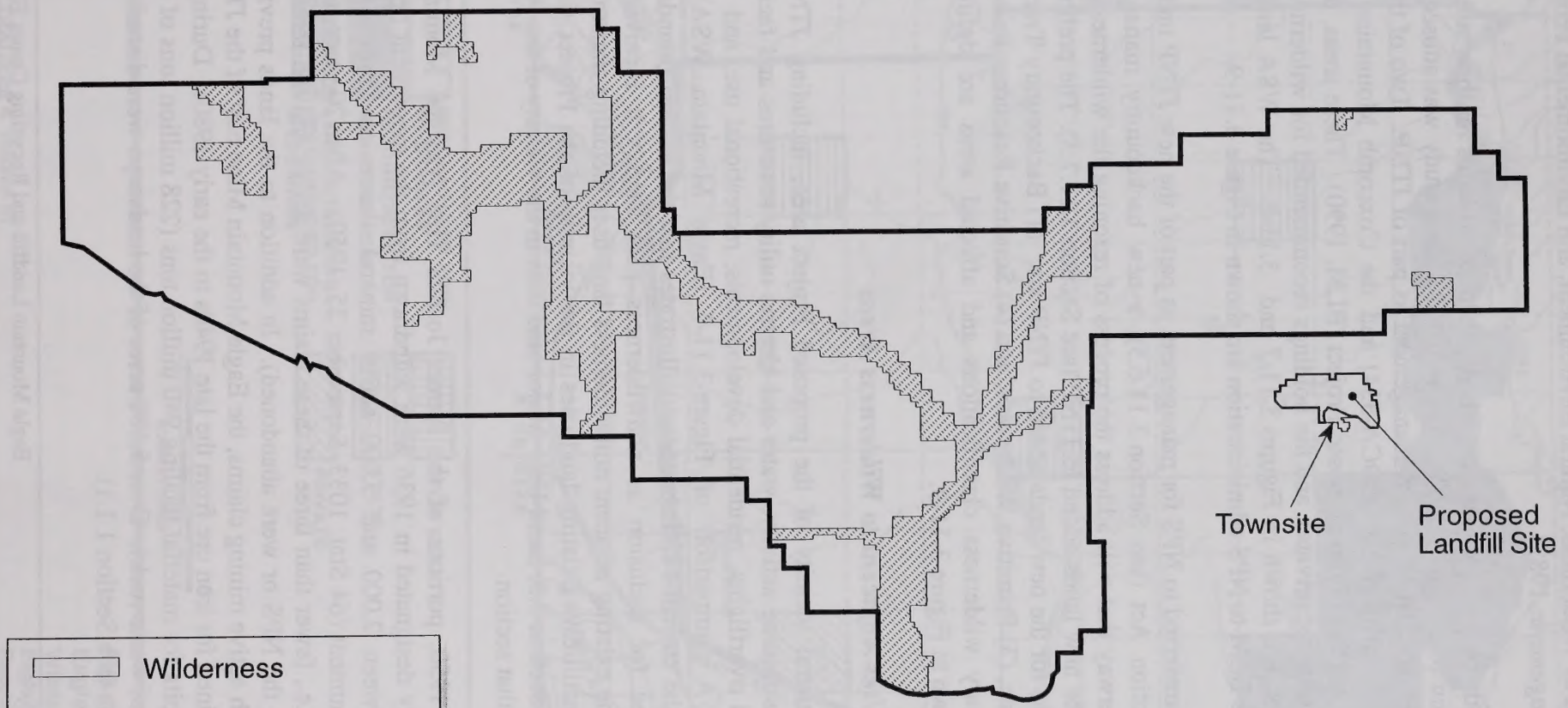
* Indicates that BLM retains subsurface property rights and private owner retains surface rights

Source: BLM Wilderness Areas, June 1995

Figure 3.11-5
BLM Mecca Hills Wilderness
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 BLMmcca 6/96



Note:
This map depicts the most recent land classification for the Joshua Tree National Park. An in-progress backcountry management planning process is being conducted that will reclassify the park lands in accordance with the Visitor Experience Resource Protection Zones (see Figure 3.11-9 of this EIS/EIR).

Figure 3.11-6
Land Classification for Joshua Tree National Monument
Eagle Mountain Landfill and Recycling Center EIS/EIR

Zone, lands are classified as Wilderness, Natural Environment, and Environmental Protection (NPS, *Statement of Management*, 1982).

As part of the CDCA study process for assessing BLM-administered lands for their suitability as wilderness, land within four of the 209 WSAs evaluated in that study was subsequently recommended for transfer from BLM to NPS management as part of JTNP. Two of the four WSAs (i.e., the Eagle Mountain WSA [CDCA-334] and the Coxcomb Mountains WSA [CDCA-328]) are in the vicinity of the proposed Project (BLM, 1990). These areas, their in ownership (i.e., federal, state, or private), and the holdings recommended for wilderness and nonwilderness designation are shown in Figures 3.11-7 and 3.11-8. The WSA lands that were transferred from the BLM to NPS administration are shown in Figure 3.11-9.

As a result of the land transferred to NPS for management as part of the new JTNP under the California Desert Protection Act (see Section 3.11.6.5), a new backcountry management planning process is underway that will address the process of rezoning the wilderness areas JTNP and will classify the new lands added to JTNP (see Section 3.11.7.3). The preliminary new zoning classifications for the new lands added to JTNP are: (1) Backcountry Transition Zone, (2) Wilderness Zone, (3) Primitive Wilderness, and (4) Sensitive Resources Protection Areas. These preliminary wilderness classifications and affected areas are defined in Section 3.11.7.3 and shown in Figure 3.11-9.

3.11.5.2 Other Land Uses Adjacent to Wilderness Areas

The land use in the general vicinity of the proposed Project area, including JTNP, is characterized by previous mining activity, water and electric utility structures and facilities, military reservations and overflights, residential developments, recreational use, and major transportation routes. A comparison of Figure 3.11-7 (Eagle Mountain WSA) and Figure 3.11-9 (showing the current JTNP boundary) illustrates that the eastern boundary of the WSA was expanded for inclusion as nonwilderness park land. It received this designation because of the existing adjacent nonwilderness land uses including transmission lines and water utility facilities. Existing land uses in the vicinity of the Project site are shown in Figure 3.5-3 in Section 3.5, Land Use. Major land uses in the vicinity of the Project site are also discussed in that section.

Mining Activities. In 1950, portions of the former Joshua Tree National Monument's (JTNM's) lands originally designated in 1936 were withdrawn from the monument because of the existence of between 2,000 and 3,000 active mineral claims on approximately 289,500 acres of the monument (64 Stat. 1033, September 25, 1950). After 20 years, few of these claims remained (i.e., fewer than three of these claims were active and the remainder had been relinquished to the NPS or were abandoned). In addition to the lands previously within the monument with active mining claims, the Eagle Mountain Mine east of the JTNP's boundary was actively mined for iron ore from the late 1940s to the early 1980s. During that time, Kaiser mined four pits for material totaling 940 million tons (228 million tons of crude ore and 712 million tons of waste rock). Over 5,500 acres of the landscape were disturbed by Kaiser's mining operations (see Section 1.1.1).

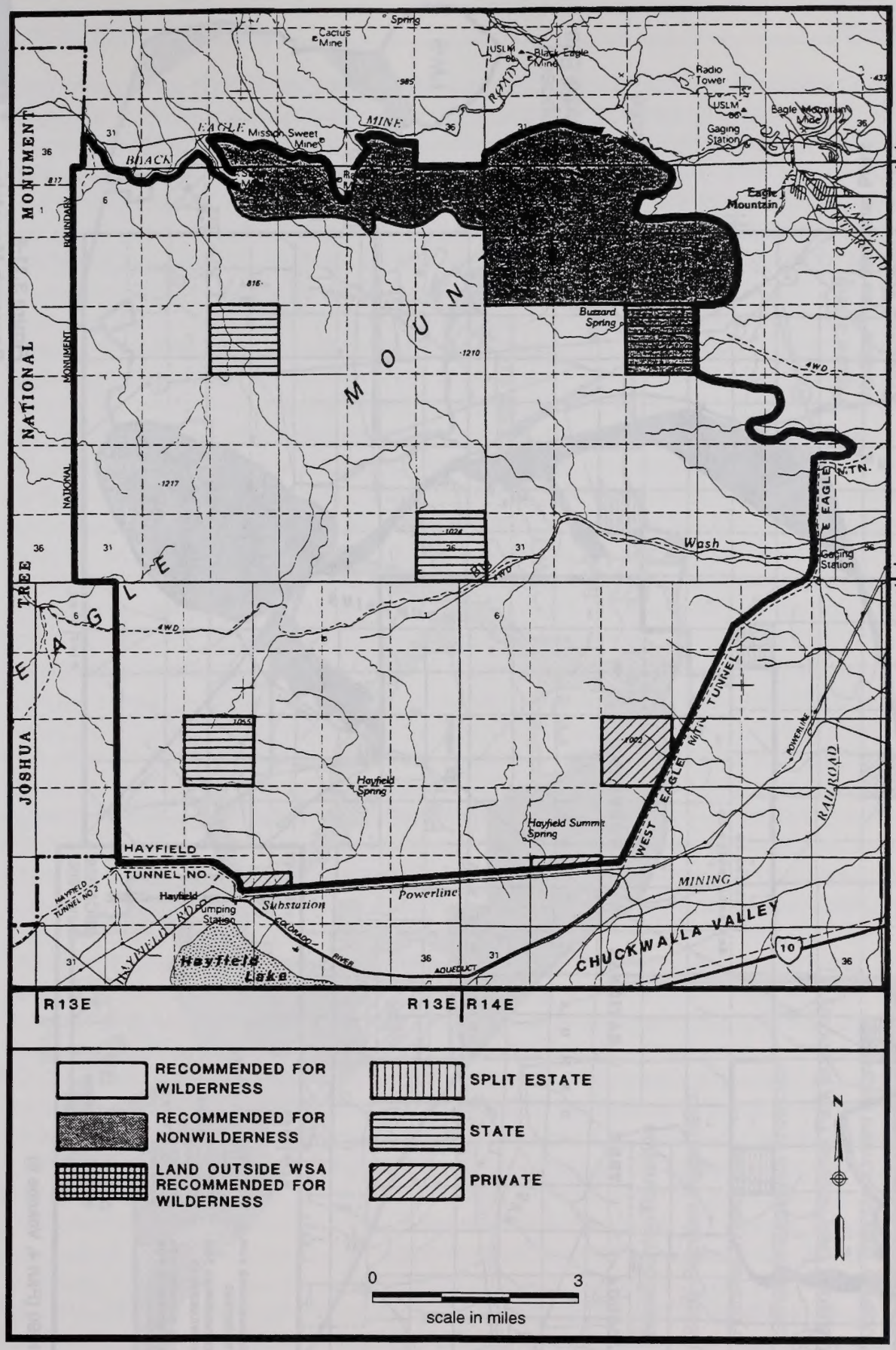
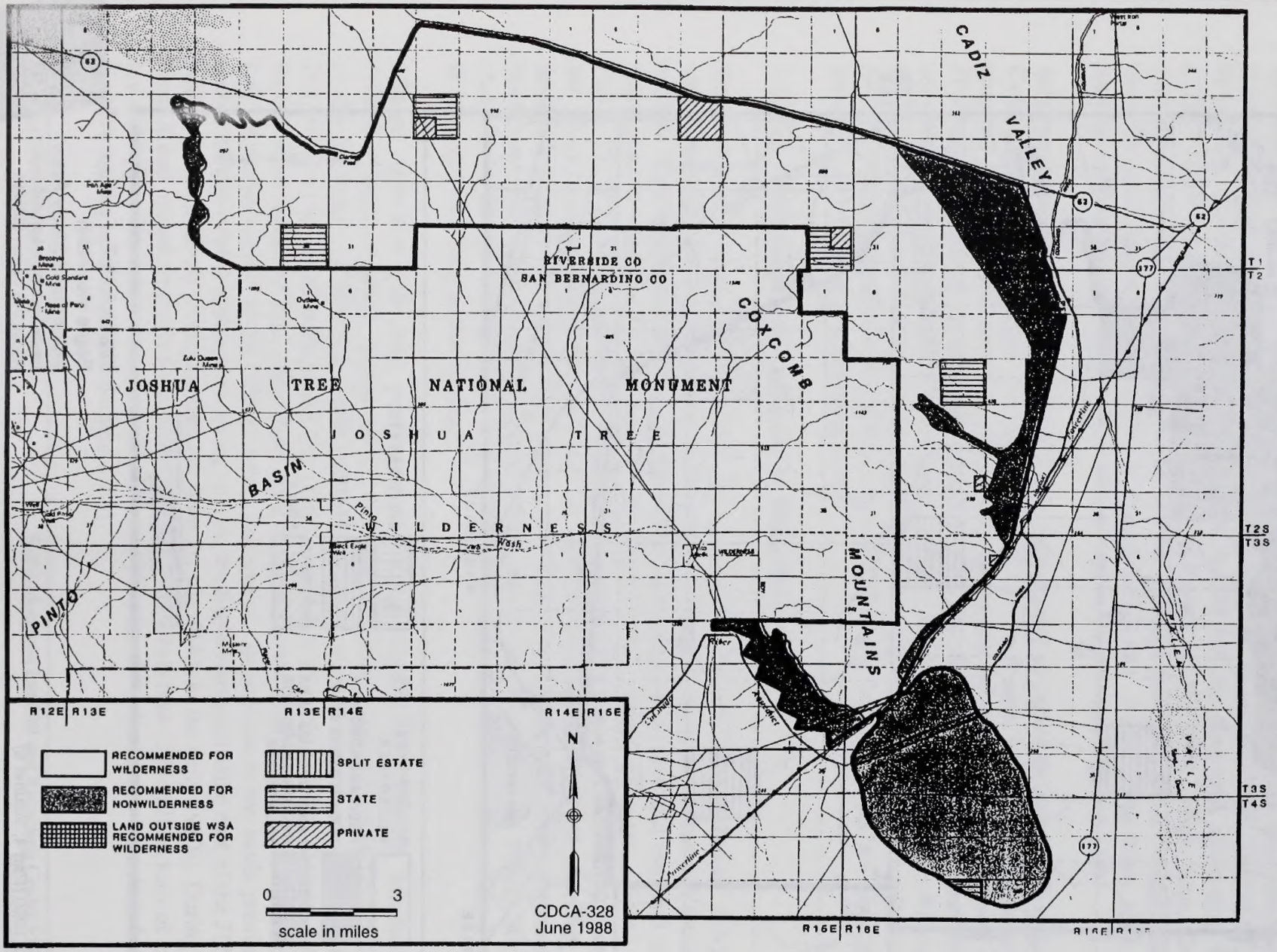


Figure 3.11-7
Eagle Mountain Wilderness Study Area
Eagle Mountain Landfill and Recycling Center EIS/EIR

Source: BLM 1990 (Part 4, Volume 6)

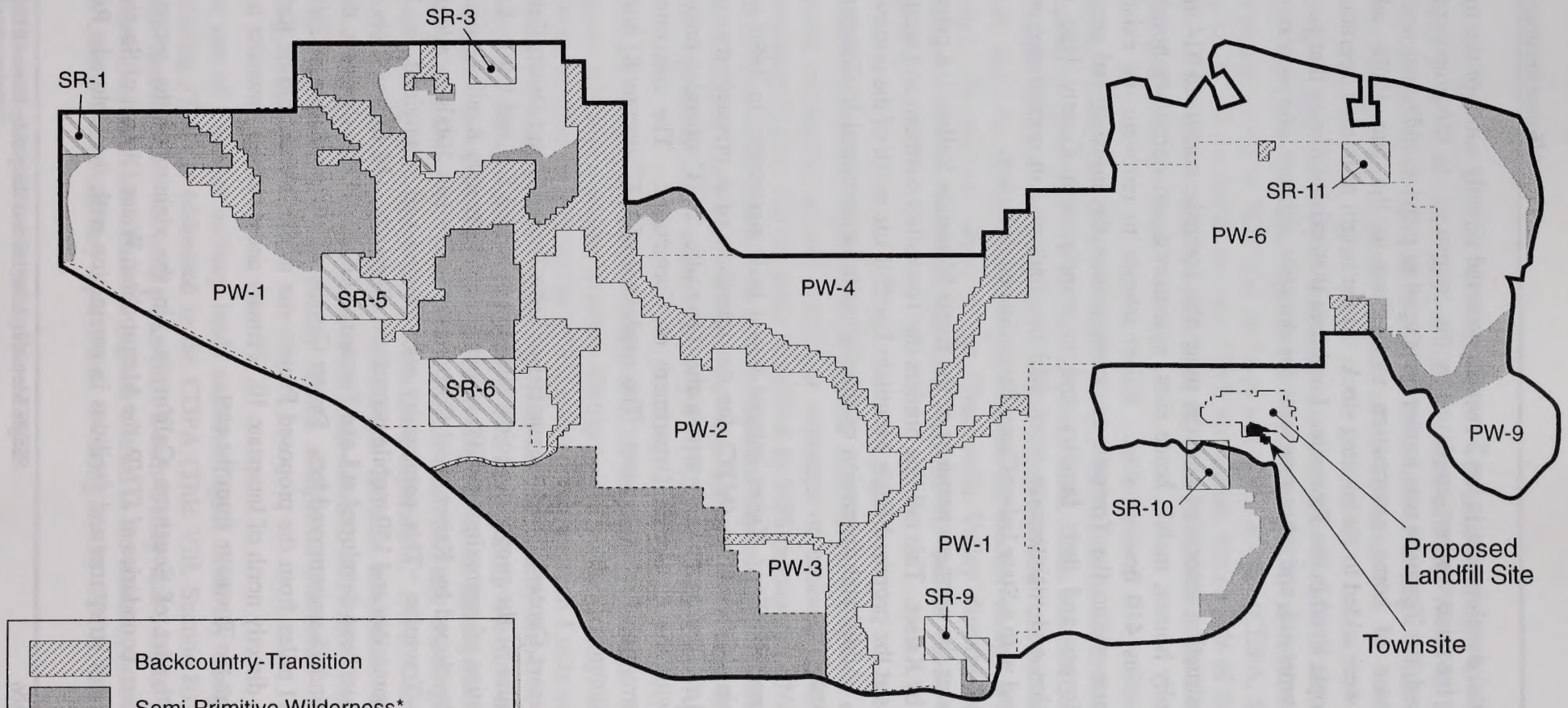
m115231.T6.20 BLMemwsa 6/96



Source: BLM 1990 (Part 4, Volume 6)

Figure 3.11-8
Coxcomb Mountains Wilderness Study Area
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL



Note: This is a draft map representing work-in-progress on the Joshua Tree National Park Backcountry Management Plan

* This zone in the Eagle and Coxcomb Mountains is designated on Department of Interior maps as nonwilderness.

Figure 3.11-9
Joshua Tree National Park Proposed Visitor Experience/Resource Protection Zones
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 backco 6/96

Townsite. Kaiser's initial development in the Townsite occurred directly south of the mine site to provide housing for mine workers employed by the company. As the employment base at the mine increased, the Townsite was further developed to provide additional worker housing. The last phase of home construction took place in the late 1960s when 75 prefabricated homes were added to the housing stock. At the height of mining operations, approximately 3,700 people lived in the Townsite. Land uses that existed during that period included residential, commercial, and other structures for churches, schools, and recreational activities.

At the end of home construction associated with the mine, the Townsite contained 914 units consisting of single-family homes, mobile home sites, apartments, and dormitory housing. The Townsite now contains 410 housing sites. Kaiser intends to renovate the existing housing and infrastructure within the Townsite to accommodate the housing and service needs of landfill employees and their families and to comply with County land use requirements. Renovation and maintenance work will be conducted in compliance with current building codes and with a State Labor Camp Permit issued to Kaiser.

The Townsite also contains the northern terminus of the Eagle Mountain Railroad, a private, 52-mile railroad owned by Kaiser. This rail line borders the Townsite's southern and western perimeter and terminates at the proposed Eagle Mountain Landfill site north of the northwest corner of the Townsite. Additional discussion of the Townsite is contained in Chapters 1 and 2 and Sections 3.5 and 4.5.

Community Correctional Facility. Kaiser entered into a lease agreement in 1989 with Management and Training Corporation (MTC) for the operation of a privately-managed community correctional facility on property within the Townsite. MTC operates under a contract arrangement with the California Department of Corrections. The correctional facility has approved permitting for 500 inmates. The employees of MTC occupy 81 homes within the Townsite community.

Lake Tamarisk and Desert Center. The communities of Lake Tamarisk and Desert Center are located within 11 miles of the proposed Project site (see Section 3.5, Land Use). Lake Tamarisk, with a population of approximately 200 is located approximately 8 miles south of the Townsite. It was developed by Kaiser Steel Corporation in the late 1960s to alleviate housing demand at the Townsite. This community was planned and subdivided for 350 single-family detached homesites and 150 mobile homesites. Currently, 146 finished lots and 150 mobile homesites have been developed at Lake Tamarisk. Of the 146 finished lots, there are currently 68 homes and 78 unimproved lots. Desert Center, with a population of 280, is located approximately 11 miles from the proposed Project site at the intersection of Kaiser Road and Highway 177, directly north of Interstate 10. Primary access to the Townsite is by Kaiser Road, which enters the Townsite from the east.

Metropolitan Water District of Southern California. In the vicinity of the proposed Project and the new eastern boundaries of JTNP, the Metropolitan Water District of Southern California (MWD) operates structures and facilities in connection with the Colorado River

Aqueduct (see Figure 1-2). In 1932, MWD was issued the right to draw water from 10 acres of land in the Pinto Basin area of JTNM known as Pinto Well No. 1 (47 Stat. 324). MWD subsequently leased the well to Kaiser Steel for use at Eagle Mine. The MWD operates a private air landing strip to the southeast of the Townsite.

The utility rights-of-way for facilities operation held by MWD are retained within the new park boundaries and the Department of Interior (DOI) is required to prepare plans for emergency access by MWD to its lands and rights-of-way (CDPA, Section 406). The lands used by MWD are within the new JTNP boundaries, but outside of the designated wilderness areas. The CDPA requires MWD to conduct its activities in a way that will minimize impacts on park resources.

Electric Utility Corridor. Within JTNP, the Southern California Edison Company has constructed approximately 2 miles of power lines. This construction was authorized under the Boulder Canyon Project Act of 1928, which allowed construction of utility lines across public lands to agencies receiving a contract for electric energy from the Boulder Canyon Project. In addition, areas in the Chuckwalla Valley directly east of the new JTNP's boundaries contain transmission lines and MWD access roads to the Colorado River Aqueduct.

Local Airports and Military Overflights. In 1991, NPS Regional offices provided data for a study estimating aircraft overflight exposure of national parks for both military and nonmilitary flights. Of 35 parks identified by NPS managers as Natural Parks (rather than Cultural Parks, such as historical sites, national capitol, and battlefields), the former JTNM ranked fifth in estimated exposure and was assessed as among those park units with the fewest opportunities for natural quiet. (NPS 1992, Appendix F and Appendix H).

There are two airports in the vicinity of JTNP near the Project site. One is the Desert Center Airport, which is a general aviation airstrip owned by the County, and the other is a general aviation landing strip owned by MWD and located less than 1 mile south of the Townsite. In addition to small planes originating from the two nearby airports, wilderness areas in the Southern California desert, including JTNP, are regularly overflown by military flights with the mission to test and evaluate defense weapons. In its *Management Plan for Cultural and Natural Resources* at JTNP, NPS contends that "Military overflights are daily events that rapidly shatter the solitude of the wilderness experience." (NPS, October 1993, p. 12). These flights include both supersonic (i.e., flight altitude minimums down to 5,000 feet) and subsonic (i.e., with flight altitude minimums down to 200 feet). These flights are considered to be critical to national security (BLM, *California Statewide Wilderness Study Report*, Part 2, 1991).

The use of adjacent military lands and overflights in newly designated desert park units, including JTNP, is addressed in the CDPA (Title VIII, Section 801 and 802). The CDPA states that the new national parks (i.e., Death Valley and Joshua Tree) and the wilderness areas within them are located in regions critical to the training, research, and development of the United States military operations. Nothing in the CDPA, the Wilderness Act, or any

other land management laws generally applicable to parks or wilderness units will restrict or preclude low-level overflights of military aircraft within such units or the designation of new special airspace units [CDPA, Section 802 (a) and (b)].

A variety of other aircraft fly over NPS holdings, including the wilderness areas of JTNP. Because the NPS has no jurisdiction for airspace over parks, it seeks to work with the Federal Aviation Administration and the various branches of the Department of Defense to resolve issues of concern.

3.11.6 Legislative Background

The following federal legislation provides the basis for the BLM and NPS to manage public lands, including wilderness areas. These statutes focus on managing wilderness areas; other land management responsibilities, such as the BLM's authority for land exchanges, are discussed under Land Use (Section 3.5).

3.11.6.1 Federal Land Policy Management Act

The Federal Land Policy Management Act (P.L. 94-579, 90 Stat. 2743, 43 U.S.C. 1701 *et seq.*) provides the BLM with an operating mandate to emphasize the concepts of multiple use and sustained yield. Section 202(c) of FLPMA requires the BLM to "use and observe the principles of multiple use and sustained yield " in developing land use plans for public lands. Multiple use is a concept that directs that public lands and their resource values be managed in a way that best meets the present and future needs of the country's people. Multiple use involves "a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources..." (FLPMA, Section 103). Sustained yield is "the achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the public lands consistent with multiple use" (FLPMA, Section 103). The BLM is directed by FLPMA to manage sustained yield consistently with multiple use. Section 601 of FLPMA created the California Desert Conservation Area (see Section 3.5.3.1 of this EIS/EIR).

3.11.6.2 National Park Service Organic Act/General Authorities Act

The NPS Organic Act (16 U.S.C. 1) created the NPS in the Department of the Interior to "promote and regulate the use of the federal areas known as national parks, monuments, and reservations hereinafter specified, except such as are under the jurisdiction of the Secretary of the Army, as provided by law, by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations" (16 U.S.C. 1). In addition to the NPS Organic Act, the General Authorities Act of 1970, as amended by the Redwood National Park Expansion Act of 1978, provides overall management direction for lands administered by the NPS. Specifically, this act states: "Congress further reaffirms, declares, and directs that the

promotion and regulation of the various areas of the National Park System...shall be consistent with and founded in the purpose established by [the Organic Act], to the common benefit of all the people of the United States. The authorization of activities [in the Organic Act] shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress" (16 U.S.C. §1a-1).

3.11.6.3 Presidential Proclamation No. 2193

The Joshua Tree National Monument was established on August 10, 1936, by Presidential Proclamation No. 2193 (50 Stat. 1760) in recognition that its "lands contain historic and prehistoric structures and have situated thereon various objects of historic and scientific interest." According to the management plan for JTNP (NPS, 1995), another reason for creating the monument was the preservation of the natural resources of the Colorado and Mojave deserts.

3.11.6.4 Wilderness Act

The Wilderness Act of 1964 (16 U.S.C. Section 1131 *et seq.*; 78 Stat. 891), established a National Wilderness Preservation System for specific lands to be designated as "wilderness areas" and administered "for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness." [16 U.S.C. Section 113(a) *et seq;* 78 Stat. 891(a)]. Areas designated as wilderness will continue to be managed by the federal agencies that administered the lands before being reclassified from nonwilderness to wilderness. The Act defines wilderness as "an area where the earth and its community of life are untrammeled by man." Section 2(c) of the Act (16. U.S.C. 1131(c)) further defines wilderness as an area that: "(1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value."

Section 4 (b) of the Act further directs each federal agency that administers designated wilderness areas to preserve the wilderness character of the area and to devote wilderness areas to the "public purposes of recreational, scenic, scientific, educational, conservation, and historical use." Sections 4 (c) and (d) outline the prohibited uses and special provisions for uses. Prohibited uses include permanent and temporary roads (except for those needed to meet minimum administration requirements), motor vehicles or motorized equipment, and commercial enterprises or structure or installation. Certain pre-existing uses, such as aircrafts, motorboats, prospecting, or mineral leasing are allowed in wilderness areas. In addition, under Presidential order, certain other activities (such as prospecting for water

resources or construction of facilities determined to be in the public interest) will be allowed in wilderness areas.

3.11.6.5 California Desert Protection Act

The California Desert Protection Act of 1994 (CDPA, P.L. 103-433) created new wilderness areas on federal lands in the CDCA, changed the status of several former monuments and preserves to national parks, and created several special designations for wildlife sanctuaries and areas of critical environmental concern. The major affected areas within the CDCA (see Sections 3.5.3.1 and 3.11.6.1) are Death Valley National Park (status changed from national monument to national park); Joshua Tree National Park (status changed from national monument to national park); and the Mojave National Preserve (formerly undesignated). The reclassification and transfer of lands affect the management of lands administered by the BLM, NPS, United States Fish and Wildlife Service (USFWS), and United States Forest Service (USFS). In JTNM, the CDPA expanded the boundaries of the monument to include lands formerly managed by the BLM and changed the monument's status to a park. This change in designation does not affect the regulations and policies under which JTNP operates; the NPS applies the same management guidance to all park units, including monuments, preserves, and national parks (NPS, 1991). Figure 3.11-1 shows the boundaries of the CDCA; the newly designated national parks and preserve (i.e., Joshua Tree, Death Valley, and Mojave); and the BLM-administered wilderness areas in the vicinity of the proposed Project. (These acreages are still under review and subject to final approval by DOI.)

The CDPA describes the areas within the CDCA reclassified as wilderness areas to be managed by the BLM, NPS, or USFWS. Title I and Title II deal with designation, administration, and review of the BLM wilderness areas covered by the California Desert Protection Act (CDPA). Section 103(d) of Title I, which applies specifically to the BLM, also stipulates under this section that "Congress does not intend for the designation of wilderness areas in Section 102 of this title to lead to the creation of protective perimeters or buffer zones around any such wilderness area. The fact that nonwilderness activities or uses can be seen or heard from areas within a wilderness area shall not, of itself, preclude such activities or uses up to the boundary of the wilderness area."

The newly designated JTNP is addressed in Title IV, which states that: (1) JTNM should be enlarged and afforded full recognition and statutory protection as a national park, (2) undesignated wilderness within Joshua Tree should receive statutory protection in accordance with the Wilderness Act, and (3) certain federal lands previously administered by the BLM should be transferred to NPS. Approximately 234,000 acres of BLM lands were transferred to the former monument's existing 560,000-acre area, resulting in a new total acreage at JTNP of approximately 794,000 acres. Of this total, about 132,000 acres comprises new wilderness areas. (See Figures 3.11-6 and 3.11-9 for the boundaries of the former JTNM, the new JTNP boundaries, and the wilderness areas within the JTNP.)

The proposed Eagle Mountain Landfill and its proximity to the newly designated JTNP was addressed by the House Committee on Natural Resources during consideration of the CDPA (CDPA Legislative History, House Report No 103-498).

> "The Committee recognizes that there is a proposed Eagle Mountain solid waste disposal facility which, if developed, would be located at the site of the defunct Kaiser iron ore mine within approximately 1.5 miles of the Joshua Tree National Park. It is not the intent of the Committee that this legislation have any effect on the future development of this disposal facility at that location, and does not expect that such development will be affected by the site's proximity to the park or wilderness within the park. The Committee notes that any such development will first have to meet the requirements of various federal, state, and local laws and regulations in order to be licensed; the Committee does not intend that this regulation be construed so as to impose additional regulation, beyond such current federal, state, and local laws or regulation, based on the mere fact that the Eagle Mountain site is in close proximity to the park or wilderness within the park, should this facility be located at that site."

The utility rights-of-way for facilities operation held by the MWD, which also were addressed by the House Committee on Natural Resources, are retained within the new park boundaries outside of lands designated as wilderness (see Section 3.11.5.2), and the CDPA requires MWD to conduct its activities in a way that will minimize impacts on park resources (CDPA, Section 406).

Section 407 of the CDPA provides for the establishment of a JTNP Advisory Commission comprising up to 15 members to advise the Secretary, DOI, on the development and implementation of a new or revised comprehensive management plan for JTNP. The commission, which will cease to exist 10 years after the date of its establishment, will include the following members:

- Elected official from each county in which the JTNP is located
- A representative of private property owners within or immediately adjacent to the JTNP
- Representatives of persons engaged in grazing and range management, mineral exploration and development, and other relevant field (i.e., biology, ecology, law enforcement, and protection of park resources and values).

3.11.7 Wilderness Management

This section discusses the wilderness management roles of the BLM and the NPS, including the applicable sections of the two agencies' separate guidance documents that outline the ways for complying with their enabling legislation, the Wilderness Act, and the Desert Protection Act. The discussion of management guidance for federal lands, particularly

wilderness areas, is presented to provide context for the geographic delineation of wilderness areas adjacent to the proposed Eagle Mountain Project discussed above in Section 3.11.5.1.

3.11.7.1 General Policies for Activities on Adjacent Private Land

The different operating mandates of the two agencies (i.e., "multiple use and sustained yield" for the BLM; "preserve and protect park resources unimpaired" for NPS) have resulted in differing approaches to managing wilderness. For both agencies, however, the implementation of these management principles generally applies only to lands under the ownership and administration of the federal government. Activities on adjacent privately owned lands generally are managed in accord with local land use provisions, such as local or county zoning codes.

The provisions of the CDPA are not intended to create buffer zones around the wilderness areas created by the act. This provision is also found in existing guidance of both the NPS and the BLM. The BLM's management guidance states that no buffer zones are created around wilderness areas to protect them from the influence of activities on adjacent lands (BLM, *Management of Designated Wilderness Areas,-8560* Section 19, 1983). The NPS operates under similar provisions. Although the NPS recognizes that park planning must occur in a regional context and that park management and resource issues are not confined by park boundaries, it does not propose to create buffer zones around national parks (NPS, *Management Policies*, 1988*; NPS, Natural Resources Management Guidelines*, 1991). To address land uses outside of park boundaries, the NPS encourages its managers to work with adjacent private landowners to protect park resources and to mitigate potential adverse effects on park resources (NPS, 1988, p. 1-4).

3.11.7.2 Bureau of Land Management Policies

The BLM, under its authorities derived from the legislation described in Sections 3.11.4 and 3.11.6 of this EIS/EIR, implements land management policies for the federal lands it administers. This section summarizes the land management guidance that applies to wilderness areas. As presented above (Sections 3.5.3.1 and 3.11.6.1), the BLM's operating mandate emphasizes the concepts of multiple use and sustained yield.

Wilderness Management Principles. As part of the BLM's multiple use mandate, the agency is charged with developing land use plans for public lands using the concepts of multiple use and sustained yield (FLPMA, Section 202(c)). To effect this mandate, the BLM has prepared guidance for implementing provisions of the Wilderness Act on BLM-administered lands (BLM, *Management of Designated Wilderness Areas-8560*, 1983), and manages wilderness areas to "provide for their protection, the preservation of their natural conditions, and the preservation of their wilderness character" (*Management of Designated Wilderness Areas*-8560.08.A) (BLM, 1983). The BLM manages wilderness areas over which it has jurisdiction according to three fundamental concepts—wilderness preservation, wilderness use, and accommodating certain nonconforming uses (BLM, 1983, Section 8560.08).

Wilderness Preservation. The concept of wilderness preservation is used to define wilderness characteristics, which are comprised of three broad categories: (1) Naturalness; (2) Outstanding Opportunities for Solitude (defined as "the state of being alone or remote from habitations" and "a lonely, unfrequented, or secluded place" (BLM, 1983); (*Management of Designated Wilderness Areas*-8560.08.A.1.b); and (3) Special Features (i.e., optional features of wilderness that could be present in wilderness areas but are not required for an area to be designated as wilderness).

To effect the mandate to preserve wilderness areas using wilderness characteristics, the management of BLM-administered wilderness areas is based on the principle of "nondegradation" (*Management of Designated Wilderness Areas*-8560.08.A.2) (BLM, 1983). (See Section 4.11 for the BLM's definition of degradation.)

Because most uses will result in some changes in the condition of the wilderness resource, the BLM has established "Limits of Acceptable Change" requiring its managers to determine various levels of human-caused changes that are allowable in wilderness but do not result in degradation (*Management of Designated Wilderness Areas*-8560.08.A.4) (BLM, 1983). These limits are required components of wilderness plans prepared by the BLM.

Wilderness Use. The BLM categorizes wilderness uses as recreational, scientific, scenic, educational, conservation, and historical (*Management of Designated Wilderness Areas*-8560.1.14.D.) (BLM, 1983). Within the parameters of these uses, the BLM can limit certain uses because of the need to preserve sensitive values or to accommodate activities associated with nonconforming uses, such as areas where mining or grazing are permitted.

Nonconforming Use. The BLM is also responsible for managing the potential nonconforming uses that could occur on BLM-administered wilderness areas but would otherwise be prohibited by the Wilderness Act [Sections 2(a), 4(b), and 4(c)]. These nonconforming uses can include existing private rights; aircraft and motor boats; control of fire, insects, and diseases; gathering of resource information; mining; grazing; water resource development; commercial recreation services; and access to nonfederal inholdings (*Management of Designated Wilderness Areas*-8560.08.C) (BLM, 1983). In instances where nonconforming uses are allowed and the potential exists for the condition of the wilderness resource to be degraded, the BLM uses the principle of nondegradation and the limits of acceptable change for analyzing reasonable mitigation from impacts from inholdings (*Management of Designated Wilderness Areas*-8560.08.A.5) (BLM, 1983).

Implementation of Wilderness Management Principles. To effect the principles for managing federal lands, including wilderness lands, the BLM applies land-use management categories, plan elements, and areas of critical environmental concern (BLM, Draft CDCA Plan, 1980). These components are summarized below and described in detail in Section 3.5.3.1.

BLM's Land Use Categories. The BLM's land use categories are: (1) Controlled Use, (2) Limited Use, (3) Moderate Use, and (4) Intensive Use. These classifications are summarized below. (Section 3.5.3.1 presents a comparative assessment of the types of activities allowed by each of these for classes.)

- Controlled Use (Class C) is designed to preserve and protect areas having wilderness characteristics as described in the Wilderness Act of 1964.

- Limited Use (Class L) is designed to protect sensitive natural scenic, ecological, and cultural resources, yet provides for low intensity multiple use that can be carefully controlled. Specific objectives are to protect sensitive natural scenic, ecological, and cultural resources.

- Moderate Use (Class M) is designed to provide a wide variety of uses, yet mitigate damage to the most sensitive resources.

- Intensive Use (Class I) emphasizes development-oriented use of lands and resources to meet consumptive needs, yet provides appropriate mitigation and protection of sensitive, natural, and cultural values.

Plan Elements. This planning feature is designed to deal with the potential for inconsistent, conflicting uses of resources within a land use class, such as use of motorized vehicles in areas designated as wilderness. (These elements are listed in Section 3.5 3.1.)

Areas of Critical Environmental Concern (ACECs). This planning component, which is discussed in Section 3.5.3.1, allows managers to focus special attention in areas where a distinctly rare or valuable resource is identified. This special consideration category is needed when protective measures of the Multiple-use Classes and the Plan Elements are insufficient to protect the resource. The ACECs in the vicinity of the proposed Project are shown in Figure 3.5-5.

3.11.7.3 National Park Service, Joshua Tree National Park

The NPS implements land management policies for the federal lands it administers, including JTNP, under the authority derived from the acts described above in Section 3.11.6. This section summarizes the land management principles used by the NPS for implementing its authorities in wilderness areas. In addition to policies applicable to all parks in the National Park System, management policies that apply specifically to JTNP form the basis of this summary. The NPS's management guidance for implementing wilderness policies and specific policies for JTNP is discussed in a several documents, including *Natural Resources Management Guidelines* (NPS-77, 1991); *Joshua Tree National Monument, Statement for Management* (1982); *General Management Plan and Final EIS, Joshua Tree National Park* (NPS 1995); *Joshua Tree National Monument Land Protection Plan* (NPS 1986; *Proposed Wilderness Area, Joshua Tree National Monument, California* (NPS 1973); and *Natural*

Resources Management Plan (NPS, 1993). In addition, JTNP is in the process of preparing a backcountry management plan.

Wilderness Management Principles. Superintendents in the NPS are responsible for managing the individual park units for which they are responsible in ways that meet both the objectives of their park's enabling legislation (or executive order) and the NPS Organic Act's mandate to leave park lands unimpaired for future generations. NPS policy guidance recognizes that successfully implementing the dual objectives of conserving resources and facilitating public enjoyment of those resources could pose difficult management choices.

Impairment and Mitigation. Although NPS recognizes that changes have occurred to parks over the years as a result of legislative and administrative actions, it acknowledges that not all impacts on a national park necessarily result in the impairment of park resources (NPS, *Management Policies,* 1988 Chapter 1:3). (Also see Section 4.11 for the NPS's definition of impairment.) For actions within the NPS park boundaries and over which park managers have jurisdiction, the NPS treats potential impairment in the same way as it does known impairment (i.e., actions will be based on retaining a resource in its unimpaired condition until nonimpairment assessment can be made within "reasonable limits of certainty" (NPS, *Management Policies,* 1988, Chapter 1:4).

The NPS also addresses the issue of impairment when it involves actions outside the boundaries of parks. Although the NPS does not "support the creation of buffer zones around the parks or seek to veto power over activities on adjacent lands, it will work cooperatively with surrounding landowners and managers to help ensure that actions outside the parks do not impair park resources and values." (NPS, *Management Policies*, 1988 Chapter 1:4). Ways in which the NPS works cooperatively with adjacent landowners include joint agency planning (when the adjacent landowner is another federal or state agency), formal agreements with landowners, providing technical assistance to adjacent landowners, and actively participating in planning and regulatory processes to mitigate potential adverse effects. In participating in these activities, the NPS must consider both economic development and environmental protection (NPS, *Management Policies*, 1988, Chapter 2:9).

The NPS relies on implementation of appropriate mitigation measures to address potential impairment. The NPS defines mitigation as "the maintenance of the existing form and integrity of natural systems or system components, consistent with park management objectives, in the face of harm or potential harm from human activities within or outside the park (NPS 1991, NPS-77, Chapter 1, p. 2) (NPS-77, NPS; 1991).

Land Management Framework. Park superintendents are responsible for preparing several planning documents to implement the policies outlined above. For all planning processes, data must be gathered and analyzed; existing conditions and future trends must be assessed; and issues need to be identified. These processes result in an evaluation of alternatives and selection of a preferred alternative. Each park unit establishes its objectives for management in a Statement of Management, which describes the existing conditions of its resources. After issuing the statement, sufficient data for analysis are gathered (i.e., cultural,

socioeconomic, and natural resources data); and the issues discussed in the statement are analyzed. Throughout the planning process, park managers are required to provide opportunities for public participation. Parks are also required to prepare a General Management Plan (GMP), with which all other planning documents must be consistent. A GMP is a comprehensive plan prepared for each park that must: (1) set forth a management concept for the park; and (2) establish a role for the park in the context of a regional setting, including regional plans for conservation, economic development, and other regional issues.

The NPS framework for land management is based on three general zoning classes for natural systems: (1) Natural Zones, (2) Cultural Zones, and (3) Park Development Zones. Management of natural resources in parks is based on these zones, which must be established in a park's GMP. Each park with natural resources also is required to prepare a resource management plan that includes a natural resources element. The NPS also is required to conduct inventories to establish baseline data describing natural resources it manages and to regularly monitor those resources to identify variations.

- Natural Zones. Natural zones are areas where land is managed for conservation of natural resources and ecological processes and to provide for public use in ways that do not adversely affect the resources and processes. Development in these zones is limited to facilities necessary for management, use, and appreciation of natural resources. This zoning classification includes all lands within a park classified as wilderness.

- Cultural Zones. Cultural zones are managed for the preservation, protection, and interpretation of cultural resources. Development in this zone must be compatible with this objective.

- Park Development Zones. These areas are used for facilities to serve park managers and visitors. In these locales, the natural environment or cultural resources could be substantially altered as a result of development. In such cases, impacts of development will be mitigated to the greatest extent possible. Alterations in the natural environment or cultural resources must be consistent with values and purposes for which the park was established.

- Special Use Zones. These are areas where existing uses not accommodated under other zoning categories, such as mining, grazing, or reservoirs, will continue to be used for those existing activities.

Because a park's GMP contains overall management guidance for a park, additional implementation plans are likely to be prepared to address specific issues in greater detail. Examples of the topic areas include wilderness and backcountry management plans. The term "backcountry" refers to primitive, undeveloped portions of parks. Although these areas are not defined as specific management zones, they are intended to describe a general condition of land within a zone or subzone. Specifically, NPS is to manage these lands "to avoid unacceptable impacts on park resources or adverse effects on visitor enjoyment of

appropriate recreational experiences." (NPS, *Management Policies,* 1988, Chapter 8:3). When a wilderness area becomes designated as park land, the statutory purpose of the park and the primary management responsibility (other than saving lives) is to include the preservation of wilderness character and resources. In these areas, the NPS guidance states that park managers will "identify acceptable limits of impacts, monitor backcountry use levels and resource conditions, and take prompt corrective action when unacceptable impacts occur" (NPS, *Management Policies*, 1988, Chapter 8:3).

The NPS is directed to include in the backcountry management plan management strategies outlining ways in which to achieve park objectives. The NPS's guidance states that wilderness plans, which may be prepared as a component of a backcountry or other management plan, will contain indicators, standards, conditions, and thresholds. If impacts to wilderness have the potential to exceed the established thresholds, management actions are to be taken to reduce those impacts (NPS, *Management Policies*, 1988, Chapter 6:4). Wilderness use is to be monitored to assess the potential human impact on wilderness areas that occurs both in designated wilderness areas and outside of wilderness areas (NPS, *Management Policies*, 1988, Chapter 6:4).

Special Designations. Areas within parks can also be managed as the following special designations: (1) Research Natural Areas; (2) National Wild and Scenic Rivers; (3) National Natural Landmarks; (4) Biosphere Reserves; (5) and World Heritage Sites. These designations are summarized below:

- Research Natural Areas. These areas are intended to represent "Prime examples of natural ecosystems and areas with significant genetic resources with value for long-term baseline observational studies or as control areas for comparative studies involving manipulative research outside the park..." (NPS, 1988). The main use of these areas is for research.

- National Wild and Scenic Rivers. This designation is reserved for parks that contain one or more river segments listed in the National Rivers Inventory that NPS maintains.

- National Natural Landmarks. These areas, which are listed on the National Registry of Natural Landmarks, are park geological or ecological sites that best characterize a natural region.

- Biosphere Reserves. These are individual park ecosystems that are "components of regional ecosystems that are believed to be internationally significant examples of the world's natural regions..." (NPS 1988, Chapter 4:4). The United Nations Education, Scientific, and Cultural Organization's (UNESCO) Man and the Biosphere program provides general guidance for the biosphere reserve program. Obtaining this designation "will not alter the purposes for which the parks were established or change the management requirements." (NPS 1988, Chapter 4:5).

- World Heritage Sites. These are natural areas "believed to possess outstanding universal value as part of the world's heritage..." (NPS 1988, Chapter 4:5). Criteria developed by the World Heritage Commission are used to evaluate and nominate candidate areas to the World Heritage List.

Implementation of Wilderness Management Principles at JTNP. The NPS implements its planning guidelines by preparing documents and plans that set operating policies and establish management objectives for individual park units. The most recent and applicable plans that have been developed or are in the process of being prepared for the former JTNM and the newly designated JTNP are: (1) General Management Plan EIS for JTNP (NPS, 1995); (2) the Wilderness and Backcountry Management Plan; and (3) Management Plan for Natural and Cultural Resources (NPS, 1993). The contents of each of these are discussed below. Other documents pertaining to overall park management (such as the *Statement of Management for Joshua Tree National Monument;* NPS, 1982) or wilderness designation (NPS, 1971; NPS, 1972; NPS, 1973) are either discussed elsewhere in this section or are obsolete as a result of subsequent NPS planning efforts or congressional action, such as the passage of the CDPA (see Section 3.11.6.5)

General Management Plan. The General Management Plan EIS for JTNP (NPS, 1995) is the overall management guidance for JTNP. The Record of Decision for the GMP was signed on September 7, 1995. Major elements of the proposed plan for JTNP include expansion of day-use activity areas in the most heavily used areas of the park, increased visitor awareness programs and opportunities, and expanded opportunities for wilderness and trail experiences. These plan components would be accomplished by cooperative agreements with adjacent landowners, redesign of developed areas, construction or renovation of visitor facilities, and reconstruction of all major roads. Wilderness and backcountry management are being addressed in the backcountry management planning process.

The overall management goals for JTNP, as listed in the GMP, are:

- Manage land and wilderness to preserve them unimpaired for future generations
- Participate cooperatively in the preservation of ecological units that extend beyond the park boundary
- Improve knowledge of natural and cultural resources
- Manage visitation more effectively and reduce impacts associated with dispersed and poorly defined visitor use facilities
- Educate park visitors regarding the NPS mission and the natural and cultural resources of the park
- Facilitate cooperative planning throughout the California Desert ecosystem with other public agencies and communities

- Improve park circulation; focus on safety, visual quality, and visitor experience
- Improve the effectiveness of park operations

In recognition of JTNP's designation as a biosphere reserve, the proposed action includes focusing interpretive programs on the theme of Man and the Biosphere (NPS, 1995)

Backcountry Management Plan and Wilderness Area Zoning. A Notice of Intent to prepare a wilderness and backcountry management plan for JTNP was published in the *Federal Register* in January 1995. An advisory panel has been formed, the Conservation of Resources Task Group (CORE), that includes environmental organizations and various representatives of park user groups, such as rock climbers and equestrians. The CORE is supported by a backcountry management planning team, which includes a special programs ranger and several representatives from JTNP's different divisions. Also participating are several NPS advisors from the Regional office.

A draft backcountry management planning map (BCMP Map) showing the Visitor Experience/Resource Protection (VERP) zoning of the park's backcountry has been prepared and distributed to planning group members (see Figure 3.11-3). VERP is a system for obtaining information on visitors' perceptions of park uses (NPS, Task Directive, Preparation of the JTNP Backcountry/Wilderness Management Plan, January 1995). The VERP map reflects the new boundaries added under the CDPA. The NPS presented its VERP zoning to the NPS Western Regional Directorate in November 1994. On the basis of the limited review comments received, JTNP anticipates that the planning process will move from a data-gathering effort to a product-oriented approach in which JTNP staff will conduct work sessions with the planning representatives to refine the specifics of the plan. Each work group has two co-chairs that represent the entire working group on the CORE (NPS, JTNP, Correspondence from Ernest Quintana, JTNP Superintendent, to Backcountry Management Planning Group members, December 21, 1994).

In February 1995, the CORE met to review the initial draft of the JTNP Backcountry Management Planning Team describing the following backcountry wilderness management zones.

- Backcountry Transition Zone. This zone would provide a sense of being immersed in the natural landscape, and a range of visitor use experiences are available in this zone. Certain nonmotorized types of transportation are permitted. This zone would require a high level of management, and the tolerance for resource degradation from visitor use would be low.
- Wilderness Zone. This zone would provide a similar sense of immersion in the landscape but is further away from comforts and conveniences than the Backcountry Transition Zone. This zone would require a moderate level of management, and the tolerance for resource degradation from visitor use would be low.

- Primitive Wilderness. This zone would provide an "untrammeled," "primeval" environment devoid of the works of people. No trails would be marked and no vehicles would be allowed. This zone would require a very limited level of management, and the tolerance for resource degradation from visitor use would be very low.

- Sensitive Resources Protection Areas. This zone would contain sensitive cultural and/or natural resources, such as critical wildlife habitat, threatened and endangered plant habitat, archaeological sites, historic areas, and water sources. This zone could require a very high level of management within or outside the zone, and the tolerance for resource degradation from visitor use would be very low.

JTNP and the CORE are working to devise criteria against which to assess the significance of impacts to lands within the above four zoning classifications. On the basis of final backcountry zone designations, JTNP will develop Quality Indicators for specific wilderness. Quality indicators are sociological mechanisms that focus on visitor perceptions and interactions for reflecting the quality of the wilderness experience and for managing wilderness areas effectively. Biological issues are not addressed under the Quality Indicators because they can be addressed in a more quantitative manner than can visitor use preferences. The process for establishing Quality Indicators is to inventory existing conditions for different areas of wilderness and establish threshold standards that, if exceeded, would result in a rezoning to a more compatible use or a revision in management practices of the area to eliminate the exceedance. These Quality Indicators would be developed for wilderness experience criteria, such as odor and night lighting.

Management Plan for Natural and Cultural Resources. The *Management Plan for Cultural and Natural Resources* (NPS, 1993) addresses the overall goals of JTNP's resource management program and contains specific proposed projects and funding requirements for conducting inventories, implementing rehabilitation or restoration measures, and maintaining and protecting resources at JTNP. The specific goal for managing natural resources is to "perpetuate the natural diversity of plants and animals along with the biotic and abiotic interactions that facilitate healthy natural systems" (NPS, 1993, p. 4). JTNP's objectives for accomplishing this goal focus on developing baseline resource inventories and long-term monitoring to detect change and, where applicable, implement mitigation measures. Additional objectives are to protect genetic diversity in plant and animal populations and protect the integrity of the physical environment (e.g., geologic, air, and water resources). JTNP also seeks to cooperate with other desert parks and agencies to foster research.

The major issues requiring attention for management of natural resources within JTNP include overcoming the lack of baseline research data, addressing potential impacts to JTNP from human uses and adjacent land uses, protecting sensitive species, and managing the wilderness resources to prevent overuse by recreationalists (NPS, 1993, pp. 10-12). Recommended steps to accomplish these objectives within the park include: (NPS, 1993, pp. 14-15):

> ...a sequential process of learning what the resources are, developing an understanding of how they fit into the natural system, documentation of alterations from their natural conditions, formulation of protocols for mitigation of significant alteration, implementation of rehabilitation where necessary, and the formulation of systematic programs such as long-term monitoring for resources protection (NPS, 1993).

The ways in which JTNP seeks to influence potential impacts from activities on adjacent land include cooperative agreements with adjacent landowners (e.g., habitat management plans for Bighorn sheep and desert tortoise) and participation in federal and state programs for environmental protection uses outside the jurisdiction of JTNP (e.g., JTNP participates in review of approximately 20 to 40 NEPA and/or CEQA documents annually). In addition, JTNP plans to increase public education and interpretive programs aimed at the general public. (NPS 1993, pp. 19-21)

3.12 Utilities and Services

Public services and utilities infrastructure currently exist at the formerly active mine site and the Eagle Mountain Townsite. This infrastructure was originally developed by Kaiser in support of mining operations and the mine worker families who lived at the Townsite during active mining operations. Kaiser continues to maintain this infrastructure in support of Kaiser's office and the community correctional facility operated by Management and Training Corporation (MTC). As discussed in Section 2 and in Section 3.5, Land Use, the Townsite will be repopulated as a result of the proposed Project according to a newly developed Townsite Specific Plan.

From a public services perspective, the affected environment would include the landfill and Townsite, as well as the surrounding communities of Desert Center and Lake Tamarisk, which are located southeast of the proposed Project site.

3.12.1 Water and Sewer Services

Well water was historically used by Kaiser for domestic purposes at the Townsite. In the early 1980s, it was determined that naturally occurring fluoride levels in the groundwater exceeded allowable state drinking water standards. Groundwater continues to be used at the Townsite for industrial and domestic purposes, but all drinking water is provided by tanker truck or in bottles. Lake Tamarisk has a treatment plant that removes fluoride from drinking water to a level that complies with federal drinking water standards.

Kaiser provides water for domestic and irrigation uses from two wells in the Chuckwalla basin. Each well is capable of producing 1,250 gallons per minute. These wells pump water to the Chuckwalla Booster Station, where two boosters pump the water approximately 7 miles to the Town Booster Station, where the water is chlorinated and then pumped into two 500,000-gallon (0.5 million gallon [mg]) domestic storage reservoirs situated above the Townsite.

Kaiser, under the direction of the County of Riverside Department of Environmental Health, monitors the disinfectant level of the domestic water once every 24 hours, and submits samples for monthly bacteriological testing. All systems currently meet state and local guidelines and standards.

The water system includes an open top, 1-mg storage tank for industrial water. This is pumped from the 4-mg reservoir at the Town Booster Station with no chlorination. This water is available for emergency fire suppression and industrial applications such as dust control and road maintenance.

In 1986, the Safe Drinking Water Act (SDWA) established fluoride standards for drinking water. As a result, the groundwater from the Pinto and Chuckwalla groundwater basins was precluded from serving as a drinking water source because the water quality did not meet the

standards set by the Environmental Protection Agency (EPA). Bulk drinking water is available to all residences within the Townsite and the school by private water purveyors from outside the local area (i.e., Blythe). Homes are supplied with 75- to 100-gallon storage tanks connected to a separate faucet in the kitchens. Businesses have a variety of larger capacity tanks and numerous dispensers. The current use of bottled water conforms to SDWA and EPA requirements.

Homes, businesses, schools, and other structures within the Townsite are connected to Kaiser's wastewater collection and treatment system. Sewage treatment lagoons are located at the southern portion of the Townsite. The collection and treatment system was designed for a capacity of up to 270,000 gallons per day (gpd). Kaiser currently operates the system under modified Regional Water Quality Control Board (RWQCB) Order 88-14 at 35,000 gpd (approximately 13 percent of its capacity). Lake Tamarisk also has a small treatment facility. Septic systems are used to treat sewage at Desert Center.

3.12.2 Fire, Police, and Emergency Medical Services

The Kaiser fire station existed at Eagle Mountain to provide service to the Townsite and the Kaiser mining operation. Riverside County Fire Station No. 80 operates from a location adjacent to the correctional facility in the western portion of the Townsite. This station is currently staffed full time by the Riverside County Fire Department. A Riverside County fire station (Station 49) also exists at Lake Tamarisk. This station is staffed and uses volunteers as backup support to the full-time employees.

Kaiser provides private security within the Townsite (with the exception of the community correctional facility). Police services also are provided to the Townsite, the mine, and surrounding area by the Riverside County Sheriff's Department from the Blythe substation. Eagle Mountain is not routinely patrolled by the Sheriff's Department, and the estimated response time for the sheriff is approximately 45 to 60 minutes.

Ambulance services for the area are provided through the Riverside County fire station at Lake Tamarisk. Local volunteers at the fire station with emergency medical technician (EMT) training provide ambulance service to the area. Paramedic and critical emergency services requiring air support are provided from Indio or Riverside.

3.12.3 Utilities

3.12.3.1 Electricity

The Project site and surrounding area in the County of Riverside lie within the service territory of Southern California Edison (SCE). The electrical distribution system (substation and lines) for some of the mine site and the Townsite is intact. Major transmission lines exist along Interstate 10 and southeast of Eagle Mountain. SCE transmits electric power to a Kaiser substation for distribution to the mine site and the Townsite. The correctional facility and housing areas used by MTC are served directly by SCE.

3.12.3.2 Natural Gas

Natural gas main lines exist along Kaiser Road. Larger gas conveyance pipelines are located along Interstate 10 and also run southwest/northeast from Desert Center. Natural gas service is provided to the Townsite and the Project area by Southern California Gas Company (SCGC), which provides service directly to the MTC correctional facility and laundromat. No service, however, is supplied to any of the households or other Kaiser-owned facilities (see Section 3.16, Energy Consumption and Generation).

3.12.3.3 Telephone

Telephone service is provided by General Telephone; and telephone lines exist for Eagle Mountain, Lake Tamarisk, and Desert Center.

3.12.3.4 Television

Cable television is currently provided to the Townsite by American Pacific Cable Television Company.

3.12.4 Community Facilities

3.12.4.1 Schools

The Townsite is located within the attendance area of the Desert Center Unified School District. Eagle Mountain School, located on property owned by the school district adjacent to the Townsite, has kindergarten through grade 8. This school occupies the former high school campus and can accommodate about 500 students. Up to 150 students can be accommodated at the inactive middle school campus. Current attendance at the Eagle Mountain School is approximately 68 pupils. The Eagle Mountain School is funded as a state migrant school with guaranteed funding for the first 140 students. Any increase in enrollment over 140 students will result in additional funding based on daily attendance figures. High school students are currently transported to Blythe. When the mining operation was operating on a full-time basis, the district served approximately 1,000 students.

3.12.4.2 Parks and Recreation

Community recreational opportunities exist at Lake Tamarisk (two lakes, recreation center, a 9-hole golf course, swimming pool, ball field, playground, picnic tables, and barbecue). The two lakes are used for recreational swimming and fishing. There also is a community park at the Eagle Mountain Townsite.

3.12.4.3 Libraries

A Riverside County branch library exists at Lake Tamarisk and is staffed by one clerk on a half-time basis. The library is currently underutilized, and the number of volumes per capita far exceeds the County of Riverside standard.

3.12.5 Solid Waste Disposal

A County of Riverside disposal site for solid waste exists west of Kaiser Road between Desert Center and Eagle Mountain, serving the Townsite, Lake Tamarisk, and Desert Center. The site is an assessment-based landfill, which is open to nearby residents who participate in the assessment district. Waste is covered twice per week at this facility, which does not currently meet EPA Subtitle D operating criteria (see Appendix B). Under the terms of the approval of the project proposed in the previous EIR, the County reserved the right to close this existing landfill, excavate the site (landfill mining), and send acceptable waste to the proposed Eagle Mountain Landfill.

3.13 Noise

This section presents the existing conditions for noise in the vicinity of the proposed Project. Noise monitoring and computer noise models were used to establish the existing noise environment in and around the Project vicinity. The Townsite, Desert Center, Lake Tamarisk, and other residences located along Kaiser Road and Eagle Mountain Road were identified as noise sensitive receivers near the Project site and along designated travel routes. Additional sensitive receivers include the JTNP boundary and the designated wilderness area of JTNP in the northern portions of the Eagle Mountains. Additional supporting information is in the *Noise Technical Report* (Appendix J) of this EIS/EIR.

There are several different ways to measure noise, depending on the source of the noise, the receiver, and the reason for the noise measurement. In this section, all noise levels are stated as hourly equivalent sound pressure levels (L_{eq}) in terms of decibels on the A-weighted scale (dBA). Noise levels stated in terms of dBA approximate the response of the human ear by filtering out some of the noise in the low and high frequency ranges that the ear does not detect well. The A-weighted scale is used in most ordinances and standards. The equivalent sound pressure level (L_{eq}) is defined as the average noise level, on an energy basis, for a stated period of time (for example, hourly). Another measurement of noise used in many standards and ordinances is the Community Noise Equivalent Level (CNEL). CNEL is a noise index that accounts for the greater annoyance of noise during the evening and nighttime hours. CNEL values are calculated by averaging hourly L_{eq} sound levels for a 24-hour period, with a weighting factor applied to evening and night time L_{eq} values. The weighting factor, which reflects the increased sensitivity to noise during evening and nighttime hours, is added to each hourly L_{eq} sound level before the 24-hour CNEL is calculated. The 24-hour day is divided into three time periods, with the following weighting:

- Daytime: 7 a.m. - 7 p.m. Weighting factor of 0 dB
- Evening: 7 p.m. - 10 p.m. Weighting factor of 5 dB
- Nighttime: 10 p.m. - 7 a.m. Weighting factor of 10 dB

3.13.1 Noise Standards

Relevant state and federal noise standards were reviewed to determine whether they apply to the proposed Project. These standards included the California Department of Health Community Noise Equivalent Level, the California Department of Health Model Community Noise Ordinance Standards, U.S. Department of Housing and Urban Development Standards for interior sleeping quarters, and County of Riverside guidelines for land use compatibility and community noise environments. The County of Riverside guidelines were determined to be the most appropriate standards because they are the most stringent noise standards among those reviewed, and because they are the local regulations most immediately applicable to the Project. The County of Riverside standards, therefore, are used to assess the significance of noise impacts in this EIS/EIR.

The County of Riverside's guidelines for land use compatibility and community noise environments are based on CNEL values. The standards define four noise exposure categories that are applied to any site proposed for development: (1) Normally Acceptable, (2) Conditionally Acceptable, (3) Generally Unacceptable, and (4) Land Use Discouraged. Figure 3.13-1 illustrates land use compatibility for community noise environments.

For transportation related noise sources, such as railroads and roadways, the County states that exterior noise levels are not to exceed 65 dBA-CNEL at residential dwellings. Interior noise levels at residential dwellings are not to exceed 45 dBA-CNEL.

The Department of Housing and Urban Development (HUD) also has developed criteria for acceptable noise levels in interior sleeping quarters. HUD recommends that interior noise levels do not exceed 45 dBA-CNEL.

For nontransportation noise sources, such as landfill operations and construction, the County states that noise levels during daytime hours (7:00 a.m. to 10:00 p.m.) are not to exceed 65 dBA-L_{eq} at any portion of a lot with an occupied residence. During nighttime hours (10:00 p.m. to 7:00 a.m.) noise levels are not to exceed 45 dBA-L_{eq}.

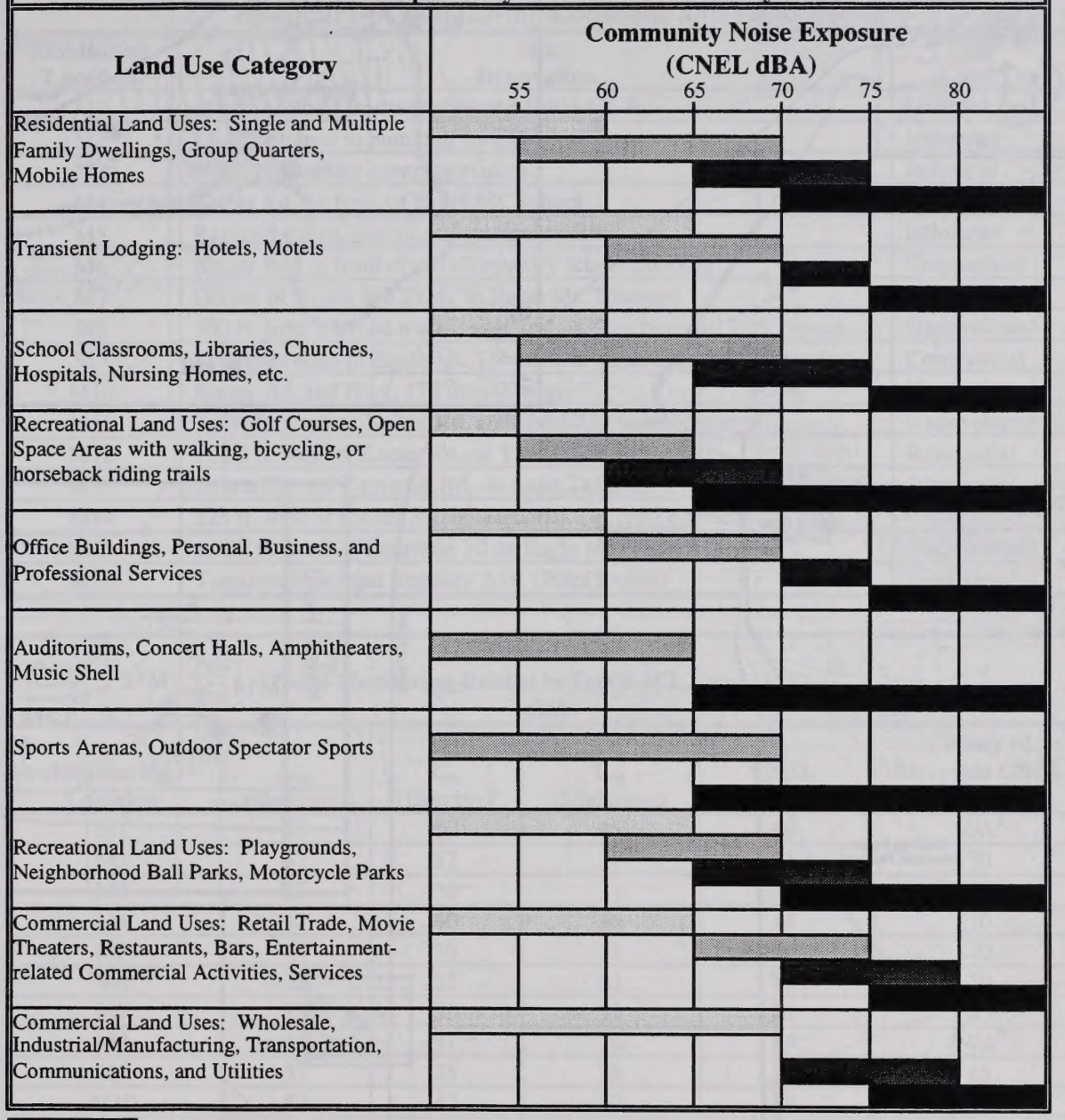
No standards address noise levels in national parks or wilderness areas. In this EIS/EIR, significance criteria have been developed for the JTNP wilderness area; these are discussed in Section 4.13, in the context of impacts of the proposed Project and the alternatives.

3.13.2 Noise Level Monitoring

Noise level monitoring was performed at 15 locations in and around the Project area to establish existing conditions and to verify noise models used in the analysis. Noise measurements were performed during the daytime, evening, and nighttime periods between June 5 and June 9, 1995. Supplemental noise monitoring was performed on January 4, 1996, along the Southern Pacific Railroad at one monitoring location (designated M16) in Palm Desert. Table 3.13-1 contains site descriptions and the corresponding land use for each monitoring location. Monitoring locations are shown in Figure 3.13-2.

For direct comparison to the County of Riverside's noise standards, noise levels were recorded in terms of L_{eq}. Table 3.13-2 contains the L_{eq} noise levels recorded during the daytime, evening, and nighttime periods and the resulting CNEL estimates. The County of Riverside's CNEL guidelines are also listed for comparison. Based on existing noise level measurements, all monitoring locations are currently in compliance with the CNEL guidelines except for M16. Actual noise levels at M16 are expected to be 5 to 7 dBA quieter due to added distance (approximately 75 feet) and the existence of an intervening cinder block wall with an effective height of approximately 8 feet. The resulting noise level of between 59 and 61 dBA CNEL is below the CNEL impact criteria. Existing L_{eq} values for the area range between 36 and 57 dBA. Maximum noise levels were recorded near roadways, such as Interstate 10, and were caused by medium and heavy truck traffic. Dominant noise sources during the measurements included traffic on roads near the measurement locations, wind, aircraft, birds, and air conditioning equipment.

Figure 3.13-1
Land Use Compatibility Chart for Community Noise



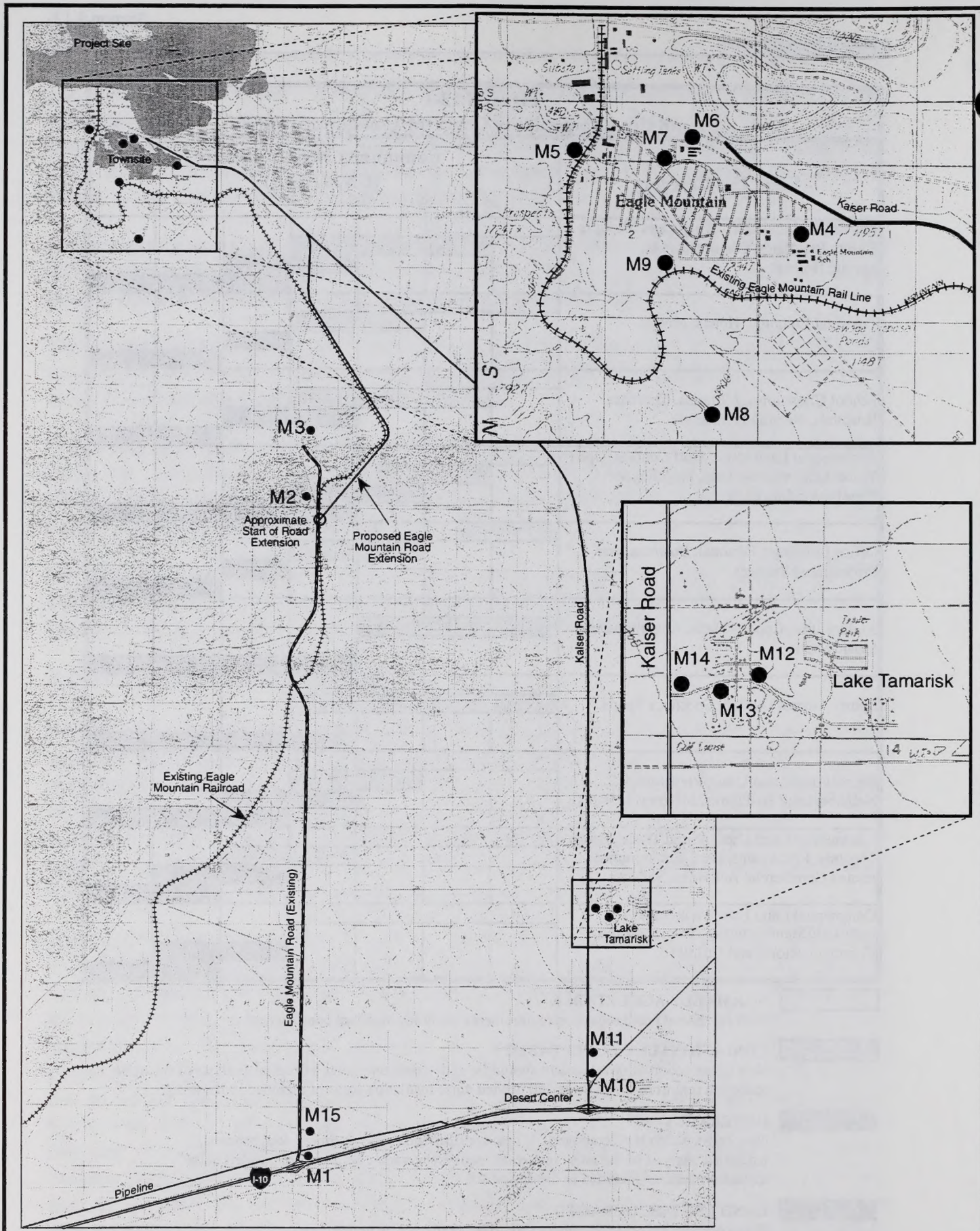
NORMALLY ACCEPTABLE
With no special noise reduction requirements assuming standard construction.

CONDITIONALLY ACCEPTABLE
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.

GENERALLY
New construction is discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

LAND USE DISCOURAGED
New construction or development should generally not be undertaken.

Source: County of Riverside, Noise Element of the General Plan.



M = Monitoring Location

Figure 3.13-2
Noise Monitoring Locations
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 noise 6/96

Table 3.13-1
Summary of Monitoring Locations and Land Use

Monitoring Location	Site Description	Land Use
M1	650 ft. north of frontage road and Eagle Mt. Rd.	Undeveloped
M2	South entrance to pumping station	Industrial
M3	North entrance to pumping station	Industrial
M4	Kaiser Rd., in front of Eagle Mt. School	School
M5	Railroad tracks, east of correctional facility	Industrial
M6	Kaiser Rd., in front of old elementary school building	Commercial
M7	Corner of Yucca and Palm, in Eagle Mt. Townsite	Residential
M8	500 ft. from railroad tracks, near Joshua Tree National Park border	Undeveloped
M9	Southeast edge of Eagle Mt. Townsite at home near railroad tracks	Commercial
M10	Kaiser Rd. and Hwy. 177 intersection	Undeveloped
M11	2,000 ft. north of Kaiser Rd. and Hwy. 177 intersection	Undeveloped
M12	1,300 ft. west of Kaiser Rd. on Tamarisk Dr.	Residential
M13	Shasta Dr. and Tamarisk Rd., in Lake Tamarisk	Residential
M14	225 ft. west of Kaiser Rd. on Tamarisk Dr. (golf course)	Commercial
M15	1,700 ft. north of Interstate 10 on Eagle Mt. Rd.	Undeveloped
M16	Tamarisk Road and Regency Ave. (Palm Desert)	Residential

Table 3.13-2
Noise Monitoring Results in Terms of L_{eq} and CNEL
(dBA)

Monitoring Location	L_{eq} (Daytime)	L_{eq} (Evening)	L_{eq} (Nighttime)	CNEL (Calculated)	County of Riverside CNEL Guideline
M1	56	50	45	**56**	N/A[1]
M2	37	37	36	**43**	70
M3	37	36	34	**41**	70
M4	41	40	36	**44**	70
M5	44	38	33	**44**	70
M6	35	35	33	**40**	70
M7	39	35	33	**41**	65
M8	41	31	26	**39**	N/A[2]
M9	37	35	29	**38**	65
M10	57	47	37	**55**	70
M11	64	40	36	**61**	N/A[1]
M12	53	42	34	**51**	65
M13	52	42	34	**50**	65
M14	54	43	34	**52**	65
M15	57	39	33	**54**	N/A[1]
M16	64	62	--	**66**	65

[1] (N/A) There are no CNEL guidelines for undeveloped lands
[2] (N/A) There are no CNEL guidelines for national parks or designated wilderness.

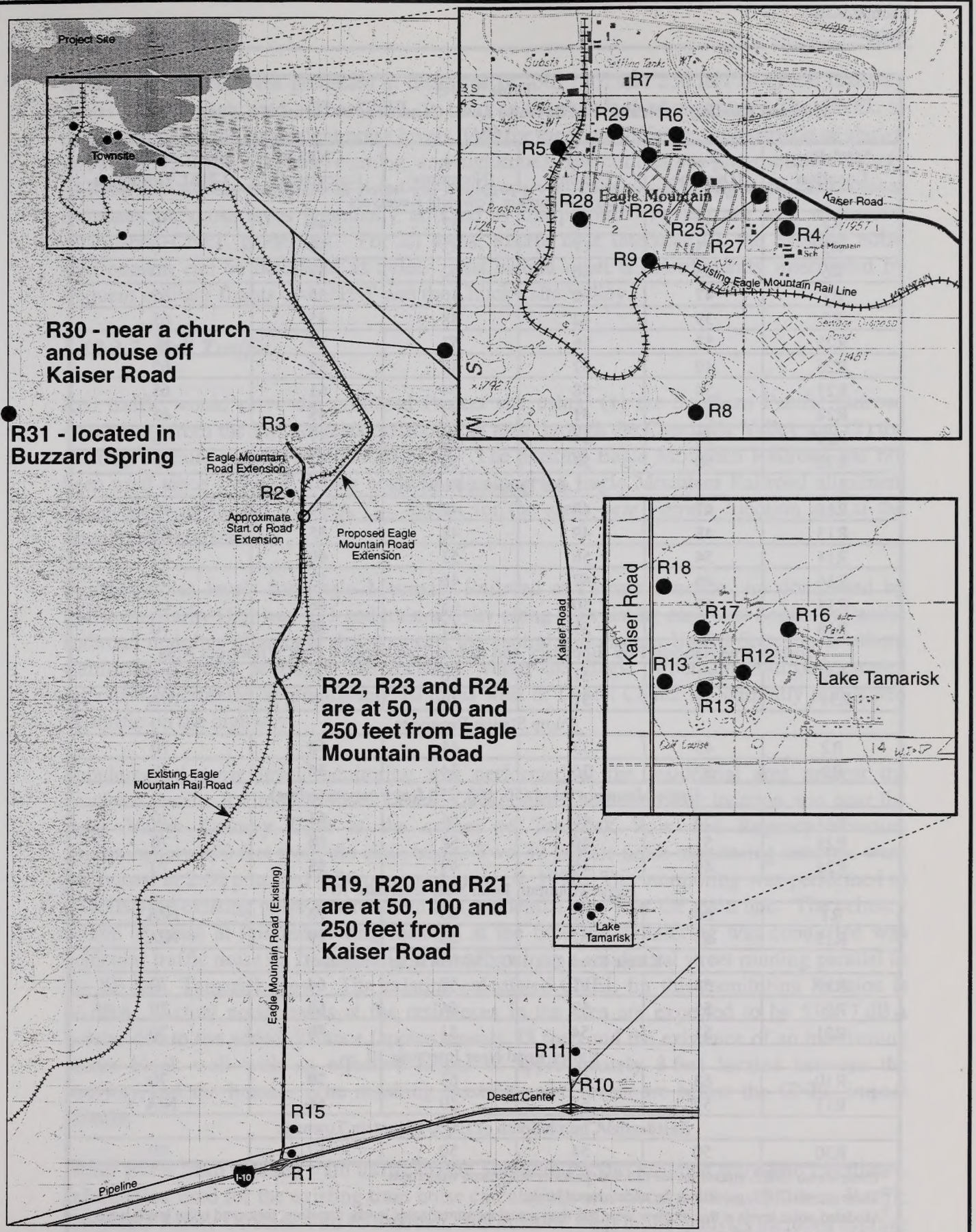
In addition to the noise monitoring, noise levels were also modeled for the existing noise conditions using the *FHWA Highway Traffic Noise Prediction Model* (U.S. Department of Transportation [USDOT], 1978), and the Wyle Laboratories Report (WCR 73-5, *Assessment of Noise Environments Around Railroad Operations*, July 1973). The modeled noise levels were used at receivers where vehicular or train traffic is the dominant noise source. At such receivers, modeled predictions of existing noise provide more useful information about existing noise conditions than spot measurements using a decibel meter, which would be affected by short-term variations in traffic volumes. Modeling existing traffic noise also provides an appropriate baseline for comparison with modeled predictions of Project impacts. Traffic information used as inputs for the FHWA model included traffic volume and speed data generated for this EIS/EIR (see Appendix D). Existing rail traffic data for the Southern Pacific Railroad were provided by Southern Pacific Transportation Company. The last rail traffic on the privately owned Eagle Mountain Railroad that travels from the proposed Project site to the Southern Pacific Railroad line at Ferrum Junction was for two iron ore shipments in 1993. Therefore, no existing rail traffic noise was modeled along the Eagle Mountain Railroad.

3.13.2.1 Vehicle Traffic

Existing noise levels were predicted along all roadways that will be used to serve the Project site. Solid waste, supplies, and personnel traveling to the Project site would use Interstate 10 to gain access to either Eagle Mountain Road or Kaiser Road. Eagle Mountain Road would be the primary travel route for transporting waste and supplies. Kaiser Road would be the preferred travel route for passenger vehicles and light duty vehicles.

The FHWA traffic noise prediction model is designed to accurately predict the traffic noise levels at receiver locations near the traveled roadway where traffic is the dominant source of noise. Noise levels predicted by the model outside its intended range of accuracy can vary substantially from actual noise levels depending on the influences of noise sources other than traffic. Furthermore, the model is best suited for predicting noise levels from high traffic volume roadways. Therefore, the noise levels predicted by the model tend to be lower than the actual noise levels at distances farther from the roadway and when the roadways contain a low traffic volume. This discrepancy between modeling and actual noise level occurs within several areas of the Project area. Thus, at those receiver locations where the predicted (modeled) noise levels are less than the actual measured noise levels, the measured noise levels were used to determine existing noise level conditions.

Traffic noise levels were estimated at 32 receiver locations. At fifteen of the 32 receiver locations, noise levels were directly monitored. At 17 additional receiver locations, existing noise levels were predicted by modeling. The receiver locations, designated as R1 through R32, are shown in Figure 3.13-3. The modeling receivers, together with the monitoring locations, sufficiently describe the existing noise environment within those areas potentially affected by traffic from the proposed Project. Existing noise level conditions are given in Table 3.13-3, which is organized according to each potentially affected area (e.g., Eagle Mountain Townsite). For those residences located along Eagle Mountain Road or Kaiser



R = Receiver Location

Figure 3.13-3
Noise Receiver Locations
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 noise2 6/96

Table 3.13-3
Modeled Existing Vehicular Traffic Noise Level Conditions in Terms of L_{eq} and CNEL
(dBA)

Modeling Location	L_{eq} (Daytime)	L_{eq} (Evening)	L_{eq} (Nighttime)	CNEL (calculated)	County of Riverside CNEL Guideline
Eagle Mountain Townsite Receivers					
R4	38	41	37	**44**	70
R5	43	47	43	**50**	70
R6	63	66	62	**69**	70
R7	47	50	46	**53**	65
R9	39	42	38	**45**	65
R25	53	56	52	**59**	65
R26	49	52	48	**55**	65
R27	54	58	54	**61**	65
R28	38	41	37	**45**	65
R29	50	54	50	**57**	70
R32	50	54	50	**57**	65
Lake Tamarisk Receivers					
R12	47	49	47	**54**	65
R13	48	49	48	**55**	65
R14	54	56	53	**60**	65
R16	46	47	46	**53**	65
R17	49	50	48	**55**	65
R18	52	55	51	**58**	70
Joshua Tree National Park Boundary and Joshua Tree National Park Wilderness Area					
R8[3]	41	31	26	**39**	N/A[1]
R31[3]	41	31	26	**39**	N/A[1]
Pump Station Receivers					
R2	43	33	44	**50**	70
R3	37	36	34	**36**	70
Eagle Mountain Road (50, 100, 250 feet from centerline)					
R22	53	46	54	**61**	70
R23	51	46	52	**58**	70
R24	49	46	49	**55**	70
Eagle Mountain Road Near Interstate 10					
R1	66	66	66	**73**	N/A[2]
R15	63	62	63	**70**	N/A[2]
Kaiser Road (50, 100, 250 feet from centerline)					
R19	58	61	57	**64**	70
R20	55	58	54	**62**	70
R21	51	54	51	**58**	70
Kaiser Road Near Interstate 10					
R10	63	64	63	**70**	70
R11	59	61	59	**66**	N/A[2]
Residential/Church South of Eagle Mountain Townsite					
R30	50	54	50	**57**	70

[1] There are no CNEL guidelines for national parks or designated wilderness.
[2] There are no CNEL guidelines for undeveloped lands.
[3] Modeled noise levels at this receiver were less than actual measured noise levels; therefore, measured noise levels were used to determine existing noise level conditions.

Road, noise levels were predicted at distances of 50, 100, and 250 feet from the roadway center line of each road. The CNEL is used as the standard of measure. The CNEL is calculated using the equivalent noise levels (L_{eq}) for the three different time periods as shown in Table 3.13-3 (i.e., daytime, evening, and nighttime). For comparison purposes, the County of Riverside CNEL guideline is listed for each receiver location. Existing traffic noise level estimates for those areas potentially affected by the proposed Project are well within the established CNEL guidelines. For all areas, except near Interstate 10, the existing noise environment can be described as quiet. This natural quiet is intermittently interrupted by frequent military flights over JTNP and the Chuckwalla Valley.

3.13.2.2 Rail Traffic

Rail traffic would serve the proposed Project site using: (1) the Southern Pacific railroad which runs from the Los Angeles metropolitan area through the Coachella Valley and (2) the existing 52-mile Eagle Mountain Railroad. The existing Eagle Mountain Railroad has not been used since 1993. Existing noise levels along the Eagle Mountain Railroad alignment range between 36 and 42 dBA L_{eq}, except for the areas near Ferrum Junction and at the crossing of Interstate 10.

Existing noise levels for Eagle Mountain Railroad at Ferrum Junction are dominated by traffic on nearby Highway 111 and train activity along the existing east-west Southern Pacific Railroad mainline alignment that connects the central and eastern United States to Southern California. Noise levels at the location where the Eagle Mountain Railroad crosses Interstate 10 crossing approximately 10 miles west of Desert Center are currently dominated by traffic on the highway.

Supplemental noise level monitoring was performed at the residential area nearest the Southern Pacific Railroad in Palm Desert, California. The monitoring location was near the Palm Valley Country Club at the corner of Tamarisk Row and Regency Avenue, approximately 250 feet from the main track. Two 30-minute noise monitoring sessions were performed at 2:00 p.m. and 9:30 p.m. on January 4, 1996. The monitoring was performed to establish the existing noise environment at a residential area near the main line. The primary source of noise at this monitoring location at the time the monitoring was conducted was vehicular traffic noise on Interstate 10 and traffic along a residential street running parallel to the SP line, Tamarisk Row. The existing calculated CNEL for this monitoring location is 66 dBA. Actual noise levels at the residences in the area are expected to be 5 to 7 dBA quieter due to the added distance (approximately 75 feet) and the existence of an intervening cinder block wall with an effective height of approximately 8 feet located between the roadway and the homes. The resulting existing noise levels are below the CNEL impact criteria.

Noise levels from existing train traffic on the Southern Pacific Railroad were also calculated. Information used for the existing train noise calculations was obtained from Southern Pacific Corporate Safety Director, Jim P. Bearden. Information used in the analysis includes average daily train traffic, length of train, speed, and a breakdown of daytime, evening and nighttime

train traffic conditions. Currently, the traffic on the Southern Pacific Railroad averages approximately 40 trains per day, with an average of 65 cars per train and average speed of 50 mph. Of the 40 trains, typically four travel during the evening, five during the nighttime, and 31 during daytime hours. The existing train noise levels for Southern Pacific Railroad in Ferrum Junction are given in Table 3.13-4.

Table 3.13-4
Southern Pacific Main Line Predicted Existing CNEL Noise Levels at Four Distances from the Track Centerline (Assuming 50 mph Train Speed)

Distance from Track (feet)	100	200	400	800
Daily Average CNEL (dBA)	74	70	64	58

3.13.2.3 Joshua Tree National Park

Noise levels were measured at the east central border of JTNP nearest the Townsite and Eagle Mountain Railroad in the foothills of the Eagle Mountains. Measured noise levels ranged from 26 dBA at nighttime, to 41 dBA during daytime hours. With the exception of intermittent military training aircraft that fly over the wilderness areas of JTNP, ambient noise levels at JTNP are produced by birds, wind and other wildlife. Because the lands surrounding JTNP are relatively undeveloped, ambient noise levels throughout most of JTNP are expected to consistently range between 26 and 41 dBA L_{eq}. Noise levels of this magnitude are very quiet, as expected for this type of environment.

3.14 Cultural Resources

This section presents the existing conditions for cultural resources in the vicinity of the Project site. The information in the previous EIS/EIR has been supplemented by a cultural resources survey conducted by Greenwood and Associates in August 1995 and by CH2M HILL in October 1995. Both Greenwood and Associates and CH2M HILL conducted field inspection of the mine site and reviewed of pertinent literature to assess eligibility of the mining and ore processing operation for assessing eligibility for the National Register. The two separate evaluations confirmed the findings of noneligibility. Appendix K, *Updated Cultural Resources Survey*, contains the findings of the eligibility assessment.

3.14.1 Regional Setting

The prehistory of the Eagle Mountain area is largely unknown. Investigations conducted elsewhere in the California desert suggest that aboriginal populations came to the region during the cool, moist conditions that prevailed at the end of the Pleistocene era, circa 12,000 years ago (Moratto, 1984). Exploiting the lake resources that existed at that time, these peoples left cultural remains that imply a variant of the Big Game Hunting Tradition, which is marked by the appearances of fluted projectile points across the middle of the continent. Apparently, this tradition was succeeded by one with a generalized hunting bias, the Western Pluvial Lakes Tradition (Bedwell, 1970).

As conditions became dryer and warmer, the prehistoric inhabitants of the California desert adapted their life-styles accordingly. Seed processing became a part of their technology, followed by incipient agriculture. Hunting remained important, and cultural differences are reflected in artifact assemblages throughout what is termed the Late Cultural Sequence (Moratto,1984). This includes the Pinto period (7000-4000 before the present [BP]), the Gypsum period (4000-1500 BP), the Saratoga Springs period (1500-800 BP), and the Protohistoric period (800 BP until the Historic period) (Moratto,1984). Pottery appeared approximately 1,000 years ago. Available evidence supports the contention that the peoples of the California desert employed varying strategies to deal with the increasingly arid conditions. For the Protohistoric period, there is archaeological evidence that some desert peoples inhabited village locales on a year-round basis (Schaefer et al, 1987). Settlement systems were highly dependent on permanent sources of water and relied on food resources from the mountain foothills to the Colorado River. Temporary campsites are better documented in the archaeological literature (Schaefer 1985; 1988) and identification of the resource and settlement strategies employed is a current topic of archaeological research.

The first Europeans to enter the Colorado Desert encountered a stable population well-adapted to the arid surroundings. At the time of contact with Europeans, five identifiable Native American groups had interest in the lower California desert. These groups, whose spheres of influence overlapped somewhat, were the Serrano in the northwest, the Chemehuevi in the northeast, and the Cahuilla to the south and west. Along the Colorado River, the Mojave and Halchidoma held sway.

European intrusion into the California desert begins with the travels of a solitary Spanish priest, Father Garces. Traveling without European companions and befriended by the Native Americans, he traveled from the junction of the Colorado and Gila Rivers through the desert to the San Gorgonio Pass and then on to Mission San Gabriel. After his initial foray, he led Captain de Anza and a party of some 200 people along a similar route in 1775. Spanish interest in the California desert was limited to its value as a transportation and communication route, and this limited involvement continued under Mexican rule, which commenced in 1821 and ended in 1848 with the treaty of Guadelupe-Hidalgo. By the early 1850s, the search for mineral wealth and the desire to exploit the then largely unused supply of water in the Colorado River led to increased travel in the region, but settlement was still thin and widely scattered, concentrated as always around reliable water supplies.

An unintended diversion of the Colorado River resulted in filling the Salton Sea basin between 1905-1915, creating a large freshwater lake in the desert. Water exploitation schemes allowed a substantial agricultural expansion, and the valleys surrounding the California desert became centers of agricultural production. With no natural exit, evaporation and influx of leached salts from adjacent farmlands have led to increased salinity, causing the brackish conditions which exist in the Salton Sea today.

Three major undertakings affected the region during the 1930s and 1940s. The first of these, the Colorado River Aqueduct, resulted in the temporary housing of several thousand workers in the area adjacent to Hayfield Spring. Remnants of their camps are still extant. The second, the California-Arizona Maneuver Area, developed as a desert warfare training center during World War II, is also still recognizable. Lastly came the development of the iron deposits in the Eagle Mountains and the building of the Eagle Mountain Railroad.

The previous EIS/EIR raised two Native American issues potentially associated with the proposed Project. The first is that the Eagle Mountains may have been a traditional location for Native American tribes such as the Mojave, Chemehuevi, and Cahuilla to hunt mountain sheep and deer. The second is that the Eagle Mountains may have sacred or special historical significance to Native Americans. Following consultation with several Native American tribal representatives, the previous EIS/EIR reported no known special ancestral significance associated with the Eagle Mountains.

3.14.2 Eagle Mountain Mine and BLM Exchange Lands

Undisturbed areas within the Project boundaries were surveyed by a team of archaeologists in 1989 and in 1991 to identify any historic or prehistoric cultural material. The pervasive surficial and subsurface disturbances associated with mining activities were noted to have removed or covered (e.g. by mine tailings) any cultural resources which may have existed on the property. No cultural resources were noted either within the Eagle Mountain Mine area or within the BLM exchange lands area. In response to scoping comments, the mine site was evaluated for National register eligibility in 1995 (see Section 4.14 and Appendix K of this EIS/EIR).

3.14.3 Road and Rail Ways

The terrain within the railroad improvement areas is essentially level. Original construction of the roadbeds entailed scraping away the natural soil for at least 20 meters on either side of the edge of the rail line.

Only one locus of cultural activity was located in association with existing road and rail ways. This area was recorded with the regional information clearing house at the University of California, Riverside, and assigned California trinomial identifier Riv-3798. One additional previously recorded site, Riv-3216, was not located within the survey boundaries.

3.14.4 Kaiser Exchange Lands

Parcels of land along the rail right-of-way which are proposed for transferal to BLM jurisdiction are, with the exception of nine isolated artifacts, devoid of evidence of prehistoric activity. Three of the nine artifacts are remnants of stone tool production found in the surveyed portion of Sec. 21, T. 6 S., R. 14 E., about three miles south of Interstate 10. Four isolated flakes were found within Sec. 8, T. 6 S., R. 14 E.; Sec. 13, T. 7 S., R. 13 E.; Sec. 22, T. 13 S., R. 11 E.; and Sec. 33, T. 6 S., R. 14 E. A single flake was found in Sec. 20, T. 8 S., R. 11 E. The remaining isolated artifact is a single sherd of Native American pottery, in a wash descending from Difficult Canyon (Sec. 27, T. 5 S., R. 14 E.). These isolated artifacts were recorded with the clearinghouse at the Archaeological Research Unit, University of California, Riverside. Section 27 also was noted as containing a trash scatter of possible pre-1940 origin. It is located some 30 meters northeast of the site where the sherd was found, on the margin of the same wash. Three bottle fragments of purple glass were found in Section 27 just south of the railroad. No other cultural materials other than obviously modern litter were noted on any of the other exchange parcels.

3.14.5 Additional Cultural Resources Inventory

An updated Class III cultural resource inventory was conducted during August 1995 by Greenwood and Associates to identify any potential cultural resources within and proximate to the Eagle Mountain Townsite, and to evaluate potential eligibility for inclusion of the Townsite and/or Townsite structures in the National Register of Historic Places, as defined in Title 36 of the Code of Federal Regulations (36 CFR 60.4). This section presents a summary of results of this survey, which comprised a review of available archaeological site archives, historical maps, and documents concerning the proposed Project, as well as an intensive surface field reconnaissance of the Townsite area. The cultural resource inventory report is included as Appendix K of this EIS/EIR.

The field reconnaissance consisted of a series of parallel transects of approximately 10 meter separation, as well as inventory and photo-documentation of existing structures within the Townsite. The entire Project area evidences extreme disturbance from building/facility construction and maintenance-related activities. During this field reconnaissance, a single isolated prehistoric artifact was encountered in townsite Planning Area 12, an approximate

168-acre area designated as open space/recreation. The artifact was a milling stone fragment, which was designated at EM-ISO#1, and a formal record of the isolated find was filed with the appropriate information center (see Appendix K). No other cultural materials other than obviously modern litter were noted.

Beyond the general history and prehistory of the nomadic peoples of this general area discussed previously, the Eagle Mountain area was cursorily involved in the precious metal mining boom of the late nineteenth century. Large-scale mineral and ore mining at the Project site commenced in 1944 with its acquisition by Henry J. Kaiser to supply the huge demand for domestic steel during World War II. Construction of the railroad line to serve the mine and haul ore began in August 1947 and was completed in June 1948. Development of the Eagle Mountain Townsite occurred concurrently with the mining operations, reaching a peak of approximately 3,700 full-time residents and 914 housing units in the late 1960s.

As noted in Appendix K, the structures associated with the Townsite, while of some interest for their role in establishing the chronology of Townsite development, do not contribute further information to the archaeological record as examples of a particular type, period, or method of construction. Consequently, the structures and the Townsite do not appear to be eligible for inclusion as a district in the National Register of Historic Places. Actual determinations of NRHP status are made by the Keeper of the National Register, in consultation with the State Historic Preservation Officer (SHPO).

3.15 Paleontology

This section summarizes the paleontologic resources in the proposed Project site. This discussion is based on the paleontologic assessment conducted by the San Bernardino County Museum in December 1989, which is included in Appendix L, *Updated Paleontological Resource Assessment*, of this EIS/EIR. It includes a review of pertinent published and unpublished geologic and paleontologic literature, institutional site records checks, and field survey of those areas defined by the literature and records searches as having the potential to contain paleontologically sensitive sediments which could be affected by project development.

The area under assessment consists of two distinct geologic and geographic areas: (1) the area north of Interstate 10 and (2) the area south of Interstate 10.

3.15.1 Area North of Interstate 10

In the area north of Interstate 10, the Project includes the proposed landfill site at the Eagle Mountain Mine, the BLM lands to be exchanged with Kaiser lands, the truck access by Eagle Mountain Road and its proposed extension, and approximately 12 miles of the Eagle Mountain rail line, all of which lie north of Interstate 10 as it runs east-west between Chiriaco Summit and Desert Center. The following rock types occur at the site and along the rights-of-way.

Gneissic rocks are of high metamorphic grade and have been subject to severe deformation. These rocks may range in age from Proterozoic to early Mesozoic. However, recrystallization involved in their formation precludes preservation of the fossils.

Granitic rocks are late Mesozoic in age and because of their intrusive nature are in part responsible for the deformation of the metamorphic rocks listed above. Their mode of emplacement and crystallization precludes preservation of fossils.

Volcanic rocks north of Interstate 10 may be early to middle Miocene in age, circa 20 million years, assuming that they are from the same volcanic event that took place in the Orocopia Mountains. The volcanic rock is not associated with sediments or volcaniclastic debris flows, and consequently, they have a low potential to contain vertebrate fossils. The proposed rights-of-way will not cross the Tertiary volcanic rocks.

Pleistocene alluvium occurs as dissected fanglomerates and terraces within the Project area. These are expected to contain coarse, angular rocks near their source and grade into finer sediments away from their source. The potential for vertebrate fossils in these sediments would increase away from the source as sediment clast size became finer and as sediments became stable and developed soil horizons.

Recent alluvium is located in valleys and in wash bottoms between outcrops of the above rock types. These recent, active sediments have low potential to produce paleontologic resources.

3.15.2 Area South of Interstate 10

The Eagle Mountain railroad south of Interstate 10 runs from the Chuckwalla Valley across the Chuckwalla Bench to Chuckwalla Summit. It then parallels Salt Creek as it runs south and east of the Orocopia Mountains and north and west of the Chocolate Mountains. The Coachella branch of the All American Canal is near the elevation of the high shoreline of ancient Lake Cahuilla. Near this point, the Eagle Mountain rail line is north of Salt Creek and runs southwesterly to its terminus at Ferrum Junction, on Highway 111 on the east side of the Salton Sea. The Eagle Mountain rail line and the lands offered by Kaiser to the BLM lie within the following geologic sections south of Interstate 10 to Ferrum Junction on Highway 111.

Gneissic rocks of high metamorphic grade in the eastern Orocopia Mountains, western Chuckwalla Mountains, and western Chocolate Mountains may be older than 500 million years. The high grade of crystallization and severe deformation precludes preservation of fossils.

Orocopia Schist in the south and western Orocopia Mountains is now considered to be Mesozoic in age. The Orocopia Schist figures prominently in discussions on amount of offset along the San Andreas fault. The high degree of crystallization and deformation precludes preservation of fossils.

Granitic rocks span a period of time that includes the late Mesozoic. Their mode of emplacement and crystallization precludes preservation of vertebrate fossils.

The Maniobra Formation of Eocene age contains an important assemblage of invertebrate fossils which includes four gastropods and two pelecypods. The Maniobra Formation plays an important part in discussions of offset along the San Andreas fault. The Maniobra Formation has the potential to contain vertebrate fossils. The Eagle Mountain rail line right-of-way and access roads will not come into contact with the Maniobra Formation.

The Diligencia Formation is now considered to include the Late Arikareean land mammal age of the early Miocene. The vertebrate fossils provide age control for the continental sediments of the Diligencia Formation which figures prominently in the discussions of offset distances and rates along the San Andreas fault. The fossil localities are approximately two-thirds of a mile distant from the Eagle Mountain rail line right-of-way and the formation itself is not encountered by the railroad right-of-way.

Tertiary volcanics interfinger the early Miocene Diligencia Formation and are mapped as being in the upper Diligencia or overlying the Diligencia Formation within the Orocopia Mountains. To the southeast, in the Chocolate Mountains, tertiary volcanics are mapped as

sitting within or on top of Pliocene or Pleistocene fluviatile sediments on the northeast side of the San Andreas fault. The volcanic rocks may provide datable horizons within the sedimentary units between early Miocene and late Pliocene times. These volcanic units south of Interstate 10 are generally associated with sedimentary units which have potential to contain vertebrate fossils. The Eagle Mountain rail line will not directly cross Tertiary volcanic rocks, but is cut into sedimentary units which may interfinger with these volcanic sediments.

3.15.2.1 Pleistocene Old Alluvium

Fluviatile sediments include coarse fanglomerates and fine-grained fluviatile sediments which occur along the Eagle Mountain rail line right-of-way. These fluviatile sediments are coarse near their source and grade to finer sediments with soil horizons near the valley centers. In the northern Chocolate Mountains and in the western Chuckwalla Mountains, geologic mapping has distinguished older Pleistocene alluvial deposits from Pleistocene alluvium. Field relationships suggest that the latter is younger than the former. The field assessment determined that the Eagle Mountain rail line runs through moderately coarse to fine fluviatile sediments with several very well developed red loamy soil horizons. These are probably equivalent in age and may be distal depositional equivalents to the Pleistocene old alluvium mapped to the south and east. The Pleistocene old alluvium along the railroad right-of-way is distinguished from younger Pleistocene alluvium by deep weathering and because it may be somewhat deformed and may contain fault offsets that are not seen in the younger Pleistocene alluvium. Fine-grained portions of the Pleistocene old alluvium and the soil horizons have potential to contain paleontologic resources. Although no vertebrate fossils were located during the field survey, soil horizons have been shown to be relatively fossiliferous compared to coarse fluviatile deposits. The potential for paleontologic resources was reinforced during the field assessment when calichified casts of roots were located in the red soil horizons. The Pleistocene old alluvium along the Eagle Mountain rail line has potential to produce nonrenewable paleontologic resources. These resources may be impacted by excavation related to railroad rehabilitation and maintenance.

3.15.2.2 Pleistocene Alluvium

Pleistocene fanglomerates and fluviatile sediments are mapped as occurring along the Eagle Mountain rail line right-of-way. These sediments may sit unconformably upon the Pleistocene old alluvium. Along the railroad, these sediments are very coarse and consequently have a low potential to contain nonrenewable paleontologic resources.

Pleistocene lacustrine sediments and interbedded fluviatile deposits are found above the high shoreline of Lake Cahuilla westward to the current shoreline of the Salton Sea. These in part are covered by a thin veneer of sediments from Holocene Lake Cahuilla and deltaic sediments from the Colorado River. However, downcutting wave action of Lake Cahuilla has exposed the Pleistocene lacustrine sediments over a broad area. The older sediments show deformation near the trace of the San Andreas fault. North of Bombay Beach at Salt Springs, these older lake sediments are nearly vertical and contain the Bishop Tuff, dated at

740,000 B.P. Lacustrine sediments of the Borrego Formation, named from deposits on the west side of the Salton Sea, may be correlative with these older Quaternary lake sediments. These older Pleistocene lake sediments are flat-lying or deformed, depending on their proximity to the San Andreas fault. Therefore, a broad range of time may be represented by these vertical sediments near the fault branches and those flat-lying sediments that are relatively undeformed. Their ages may range from middle Pleistocene at Bombay Beach, where the Bishop Tuff is exposed, to less than 35,000 B.P. North of Wister, the flat-lying sediments contain an articulated limb of a Pleistocene horse. Review of the Regional Paleontologic Locality Inventory at the San Bernardino County Museum identified many resource localities in the vicinity of the Eagle Mountain rail line where sediments are exposed west of the Coachella Canal to the margin of the Salton Sea (see Appendix L).

The field survey along the Eagle Mountain Railroad reinforces the fossiliferous nature of the sediments between the Coachella Canal and Highway 111. See Appendix L, for locations.

Pleistocene lacustrine sediments along the Eagle Mountain Railroad west of the Coachella Canal and the terminus of the railroad at Ferrum Junction have potential to contain nonrenewable paleontologic resources.

Recent alluvial sediments occur on slopes covering the above-mentioned areas as well as in active washes located centrally in valleys. These recently active sediments have low potential to contain paleontologic resources.

Sedimentary rocks with high potential to contain nonrenewable paleontologic resources occur at the Interstate 10 junction with Eagle Mountain Road and south of Interstate 10 in several sedimentary units along the Eagle Mountain Railroad.

3.16 Energy Consumption and Generation

The affected environment for energy consumption includes existing consumption patterns at the proposed Project. Because the proposed Project is intended to serve an existing seven-county wasteshed, which presently generates municipal solid waste that will continue to require final disposal at some location, existing conditions also include energy consumption levels related to current disposal practices for municipal solid waste. The primary energy resources of concern include fossil fuels (primarily diesel fuel), electricity, and natural gas.

3.16.1 Fossil Fuels

Because the Eagle Mountain Mine has ceased full-time operations, fossil fuel consumption associated with these existing Kaiser activities is assumed to be insignificant in relation to that consumed on a regional or county basis. A similar situation is assumed to exist for fossil fuel consumption associated with current Townsite and correctional facility activities, where the primary use likely would be related to resident or temporary visitor vehicle gasoline consumption.

3.16.2 Utilities Serving the Project Area

3.16.2.1 Electricity

The Project site and surrounding communities are served by Southern California Edison (SCE) Company. The current Kaiser mining property and the Eagle Mountain Townsite properties owned by Kaiser are served by a 67-kilovolt (kV) transmission line and substation. The substation and low voltage distribution circuits originating from the substation are owned by Kaiser. The Kaiser-owned Townsite electric distribution system operates at 4.16 kV. A Kaiser-owned 12.8-kV distribution system served the mining operations. The rated power capacity of the Townsite distribution system is 35.7 million-volt-amps (MVA); the mining power system capacity is rated at 16 MVA (Kaiser, 1995).

The substation has experienced energy demands substantially lower than its capacity since the mine ceased full-time operation. Recent billings of SCE revealed that the metering equipment on the high voltage side of the stepdown transformers sometimes cannot measure the demand kW because of such low usage (SCE, 1995).

SCE extended a 12-kV overhead distribution line into the Townsite to serve non-Kaiser end-users, including the MTC correctional facility and its associated employee residential units. The correctional facility and correctional facility employee residential units are individually metered. SCE staff has indicated that the utility uses a 6-kW per household peak load to forecast demand for the Eagle Mountain Townsite. The estimated annual energy usage is 25,000 kWhr per household. (SCE, 1995)

3.16.2.2 Natural Gas

A Southern California Gas Company (SCG) 6-inch natural gas main line runs along Kaiser Road with larger gas transmission lines running parallel to Interstate 10. This natural gas main terminates near the Kaiser Ventures, Inc. administration facilities in the Townsite. Natural gas service is provided to the correctional facility, the laundromat, and the Project vicinity. No service, however, is supplied to any of the households or Kaiser-owned facilities (Telephone Communications, Mike Tovar/CH2M HILL with J. Sprague/SCG, September 1995; and with Jan Roberts/Kaiser, September 1995). SCG was contacted to determine current capacity and estimated average monthly consumption associated with the Eagle Mountain 6-inch gas main line. SCG staff noted that, due to the multiple feeds served by the gas main, such information is not readily available. SCG staff noted, however, that the main has the ability to meet whatever additional capacity demands may be imposed upon it (Personal Communication, Mike Tovar/CH2M HILL, with J. DeWitt/SCG, September 1995).

4.0 Environmental Consequences

This section presents the analysis of impacts associated with the Proposed Action and the alternatives to the Proposed Action, defines the significance standards for the associated environmental resources areas discussed in Section 3.0, Affected Environment, and provides mitigation measures, where applicable, for potential environmental impacts associated with the Proposed Action and the alternatives. The impacts analysis in this section has been prepared in accordance with NEPA and CEQA guidelines.

The following resource areas are discussed in this section:

- Groundwater
- Public Health and Safety
- Traffic and Transportation
- Air Quality
- Land Use
- Surface Water
- Biological Resources
- Socioeconomics
- Geology and Mineral Resources
- Visual Resources and Recreation
- Wilderness
- Utilities
- Noise
- Cultural Resources
- Paleontology
- Energy

4.1 Groundwater Quality and Use

This section presents the standards for significance for groundwater quality and use, and applies those criteria to evaluate the potential impacts of the proposed action and the alternatives on groundwater resources in the vicinity of the action. The potential impacts are evaluated individually with respect to the proposed action and each of the alternatives. In addition, the potential for water quality degradation in JTNP, the Colorado River Aqueduct, and the groundwater of the Coachella Valley is also evaluated. A detailed discussion of impacts and supporting data is in Appendix C-1, *Technical Memorandum*, of this EIS/EIR (including the applicable state and federal regulations and requirements for the protection of groundwater quality on which significance criteria for water quality-related impacts are based).

4.1.1 Standards of Significance

Appendix G of the California Environmental Quality Act (CEQA) Guidelines identifies several potential consequences of a project that would normally represent a significant effect on the environment. Six of these potential effects are relevant to groundwater quality and use in the Eagle Mountain area because the Chuckwalla aquifer is a local source of water supply:

- Substantial degradation of water quality
- Contamination of a public water supply
- Substantial degradation or depletion of groundwater resources
- Substantial interference with groundwater recharge
- Encouragement of activities that use large amounts of water
- The use of water in a wasteful manner

In this EIS/EIR, the evaluation of potential Project-related impacts on groundwater resources is based on these six potential effects. In addition, the potential for ground-surface subsidence caused by groundwater withdrawals is also evaluated. The following criteria are used in this evaluation for groundwater resources. (The definitions for specific significance standards and the basis for selecting specific values associated with these criteria are discussed in Appendix C-1.)

4.1.1.1 Groundwater Quality

The significance criteria for groundwater quality pertain to the degradation of groundwater quality and the contamination of a public water supply. Either of these outcomes could occur if the proposed action or alternatives result in: (1) leachate release to groundwater from the landfill; (2) landfill gas release and subsequent contaminant transfer from the gas to groundwater; (3) contaminant release to groundwater from landfill support facilities; or (4) contaminant release to groundwater from Townsite facilities.

Groundwater-Quality Degradation. The proposed Project would significantly affect groundwater resources if it degraded groundwater quality. Groundwater-quality degradation is defined in this EIS/EIR as a detected increase in the concentration of any specified constituent of concern above either: (1) the pre-established background value (see Appendix C-1); or (2) state and/or federal water quality standards.

Contamination of a Public Water Supply. Because the local groundwater is a source of public supply, the effect of the proposed Project would be significant if it resulted in the contamination of the local groundwater. In this EIS/EIR, groundwater is considered contaminated if it is out of compliance with state or federal drinking water standards.

4.1.1.2 Groundwater Use

The significance criteria for groundwater use address groundwater depletion, interference with groundwater recharge, encouragement of activities that use large amounts of water, wasteful use of water, and ground-surface subsidence.

- **Groundwater Depletion.** The Project would result in a significant impact to groundwater resources if it resulted in a substantial depletion of groundwater resources. In this EIS/EIR, "substantial depletion" is defined as a decline in current groundwater levels that results in: (1) a loss to rights holders of beneficial uses of local groundwater resources; (2) a condition of groundwater overdraft (i.e., when total annual pumping in the Chuckwalla Basin exceeds 12,200 acre-feet [ac-ft]); (3) the cessation of groundwater-fed water resource features (e.g., springs, perennial surface water flows); or (4) degradation of the quality of water pumped from existing wells.

  A loss of beneficial use of groundwater can be defined in terms of water-level decline in existing wells (i.e., when the water level in a given well drops to a certain point, the rights holder is no longer able to put the groundwater to beneficial use, without deepening the well). The key factor is the amount (depth) of water a well must have to be functional (i.e., provide a means of beneficial use of the groundwater). Based on the physical properties of the Chuckwalla aquifer, and typical pumping rates of local wells in the vicinity of the Project site, the minimum depth of water in an existing well for it to be functional is assumed to be 40 feet.

  In this EIS/EIR, therefore, a Project-induced loss of beneficial use would occur when Project pumping lowers the static water level in an existing (non-Project) water-supply well to a point where there is less than 40 feet of water remaining in the well. This concept is schematically illustrated in Figure 4.1-1. The basis for the value of the minimum depth of water is presented in Appendix C-1.

- **Interference with Groundwater Recharge.** Groundwater recharge refers to the addition or input of water to groundwater. Sources of recharge include: (1) the subsurface inflow of groundwater from adjacent upgradient groundwater basins (i.e.,

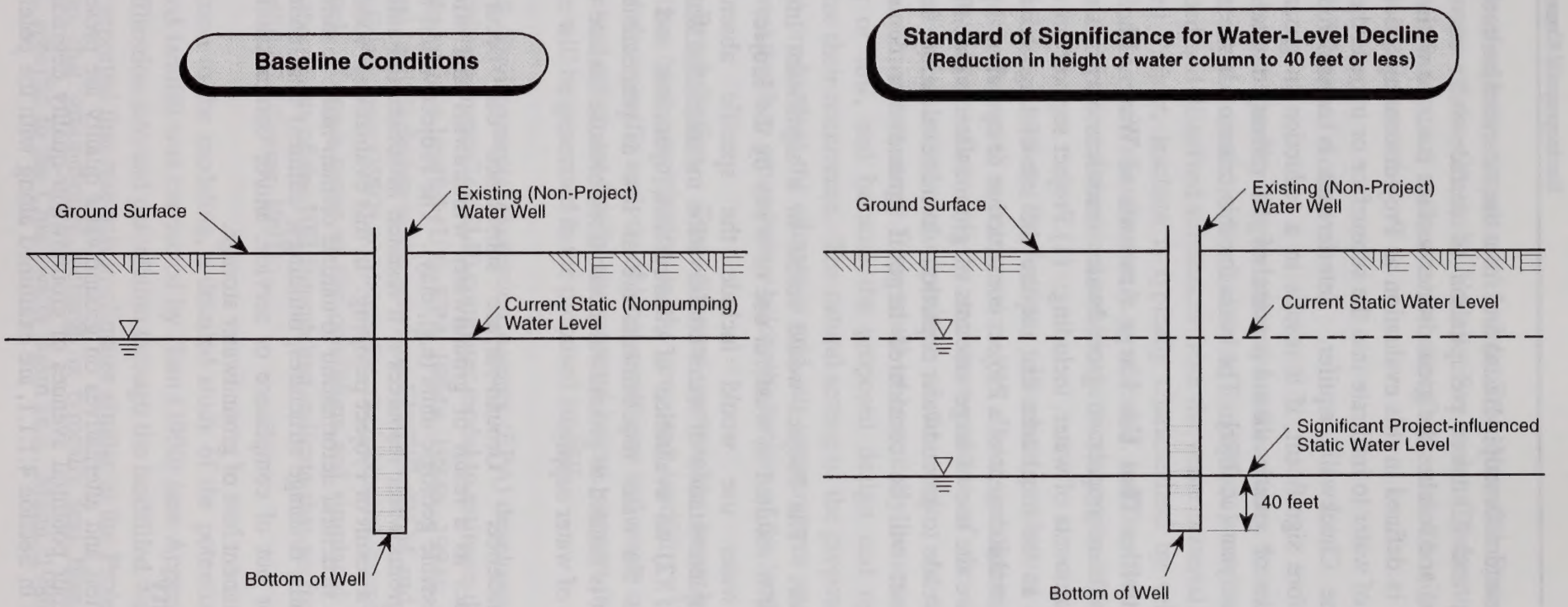


Figure 4.1-1
Schematic Representation of Standard of Significance for Water-Level Decline in an Existing Well
Eagle Mountain Landfill and Recycling Center EIS/EIR

the Pinto Basin and the eastern Orocopia Basin) and from the saturated bedrock of the surrounding mountains; and (2) direct precipitation of surface-water runoff, that infiltrates into the ground and reaches the groundwater surface (i.e., the water table). The term "interference" is defined in this evaluation as Project consequences which either reduce the ability of water to infiltrate into the subsurface or impede the inflow of groundwater into the Chuckwalla aquifer. Interference is considered to be "substantial," and therefore significant, if it results in a reduction in groundwater recharge that is equal to or greater than 1 percent of the estimated total annual recharge (12,200 acre-feet/year [ac-ft/yr]. The basis for this criterion is presented in Appendix C-1.

- **Encouragement of Activities That Use Large Amounts of Water.** The Project would result in a significant impact to groundwater resources if it encouraged activities that use large amounts of water, including: (1) Project support for actions, facilities, or enterprises in the local area that require the use of large amounts of groundwater; or (2) the establishment of a Project construction or operational policies or procedures that require the use of large amounts of groundwater. The effects of large water use directly relate to groundwater depletion. In this evaluation, therefore, water use by the Project will be considered large if groundwater depletion is substantial (see above).

- **Wasteful Use of Water.** The Project would result in a significant impact to groundwater resources if it resulted in wasteful use of water by the Project In this evaluation, wasteful water use would include the specific absence of: (1) consideration and implementation of water conservation measures for water uses required by the Project; (2) an evaluation of construction, operation, and closure activities to ensure that the water requirements are as low as practicable. The evaluation of this impact is limited to groundwater resources because surface water is not available as a source of water supply.

- **Ground-Surface Subsidence.** Ground-surface subsidence can occur when subsurface strata compact as a result of groundwater withdrawals that effectively dewater specific compressible geologic units (e.g., clay). The Project would result in a significant impact to groundwater resources if it resulted in substantial subsidence of the ground surface as a result of Project pumping. In this evaluation, "substantial" subsidence is defined as structural deformation to natural or man-made features (e.g., landfill components, roads, drainage structures, buildings, utilities) that render these features either unsafe or out of compliance or service, and/or compression of the aquifer resulting in permanent loss of groundwater storage.

4.1.2 Groundwater Quality

The effects of the proposed action and alternatives on groundwater quality are presented in this section. Specifically, the four potential avenues of groundwater-quality degradation or contamination, identified above in Section 4.1.1.1, are examined along with the potential for

groundwater-quality impacts to Joshua Tree National Park, the Colorado River, and the groundwater of the Coachella Valley. For each of these topics, the potential impacts are identified, mitigation measures are described, and the significance of the impacts after mitigation is presented.

4.1.2.1 Proposed Action

Groundwater Quality Degradation from Leachate. Leachate is water that has infiltrated through, and/or come in contact with, landfilled waste and, as a result, contains both suspended and dissolved substances from the waste material. At Class III sites, such as the proposed Project, leachate is typically characterized by relatively high concentrations of primarily inorganic constituents (e.g., chloride, sulfate, iron, sodium, total dissolved solids) and elevated values of chemical and biochemical oxygen demand and trace organics.

Potential for Leachate Production. Leachate production requires a source of water or moisture. Potential sources are: (1) direct precipitation; (2) surface water run-on; (3) groundwater inflow, (4) the moisture content of the waste itself, and (5) the water produced by microbial decomposition of the waste. At the Project site, these potential sources of moisture range from small to essentially nonexistent because they are naturally lacking or low, and because the proposed design and operation of the landfill would minimize their occurrence. The natural setting of the proposed Project is not well suited for leachate production; the climate is arid, air temperatures and evaporation are high, and the shallowest depth to groundwater below the bottom of the landfill is more than 100 feet.

Direct Precipitation. Two different approaches have been used to evaluate leachate production from precipitation in the proposed landfill: (1) model simulations and (2) a detailed site-specific analysis of local conditions and waste composition. The results of both approaches, which are briefly summarized below, support the conclusion that essentially no leachate will be generated in the proposed landfill.

The U.S. Environmental Protection Agency (EPA) developed the "Hydrologic Evaluation of Landfill Performance" (HELP) computer model to estimate the amount of leachate that could be produced in a landfill (U.S. EPA 1984a, 1984b, 1991). This model was applied to the proposed landfill design in the previous EIS/EIR (BLM and the County of Riverside, 1992) and in GeoSyntec (1992) to determine the potential quantities of leachate that could be generated. Using a range of site conditions and simulated time (up to 100 years) into the future, the results of the HELP modeling indicate that no free leachate would accumulate in the landfill (GeoSyntec, 1992).

In addition to the modeling, a detailed study of the potential for leachate production at the proposed landfill was conducted by Ham (1990) (see Appendix C-5). This study concluded that infiltration into and percolation through the landfilled waste would be insignificant. Ham (1990) reported that research in climates similar to the Project site (i.e., arid and snow-free) indicates that groundwater recharge is typically less than 25 percent of rainfall. Other studies, specific to the Chuckwalla Basin (e.g., Mann, 1986), estimate that only between 5

and 10 percent of rainfall reaches groundwater. In the Project area, 25 percent of the annual rainfall equates to less than 1 inch per year. Ham (1990) concludes that this amount, which according to Mann (1986) is abnormally high for local recharge, would not significantly change the moisture content of the waste or promote moisture flow within the waste at the proposed landfill.

If leachate is produced, Ham (1990) concluded that the production would be intermittent; and the concentration of dissolved substances would be low because leachate would be produced in significant quantities only when rain falls either directly on the leachate collection system (prior to filling with waste) or on the waste when it is only a few feet thick (i.e., at the beginning of the filling of a particular area).

The results of computer modeling and site-specific studies are consistent with other sources and studies (EPA, 56 FR 50991, Section IV.A of the preamble to the municipal solid waste regulations; Keenan 1986), which conclude that little or no leachate is produced in areas where the annual rainfall is less than 25 inches per year. In the Eagle Mountains the rainfall averages 3.5 inches per year. These sources support the site-specific determinations, cited above, that essentially no leachate will be produced at the proposed landfill.

Surface Water Run-on and Groundwater Inflow. Surface water runoff from rain in the local canyons upgradient of the landfill will be prevented from coming into contact with the waste. Drainage structures along the perimeter of the landfill will direct surface flows away from the landfill (see Section 4.6; GeoSyntec, 1992). These structures are designed to handle the runoff from a 100-year storm event with enough additional free-board to accommodate the runoff from a 500-year event.

The flow of groundwater into the landfill is not expected to occur because the highest recorded groundwater level under any portion of the landfill footprint is more than 100 feet below the lowest proposed elevation of the landfill bottom. The minimum vertical separation between the landfill bottom and groundwater required under state or federal regulations is 5 feet.

Moisture Content of Waste. The average moisture content of municipal refuse generated in Southern California is about 21 percent (Appendix C-5). The maximum moisture content, as stated in the waste discharge requirements (WDRs) (Regional Water Quality Control Board [RWQCB] Order 94-036), is 40 percent. This value (of 21 percent moisture) assumes that a significant portion (30 percent) of the refuse is composed of yard waste, which typically contains 55 percent water. With the implementation of California Assembly Bill (AB) 939 (PRC 41780), the amount of yard waste sent to landfills will decrease.

Under AB 939, all jurisdictions must, by the year 2000, have reduced the amount of waste landfilled by 50 percent. The methods to achieve the required reductions consist primarily of recycling and composting. As a result of progressively more yard waste being composted, the average moisture content of the waste that would be landfilled at Eagle Mountain is estimated to decline to approximately 15 percent (Appendix C-5). This estimate does not

take into account an additional reduction in moisture that could occur prior to landfilling at Eagle Mountain (e.g., from losses due to compaction of the waste, heat generated during waste processing and microbial decomposition, and contact with air).

Microbial Decomposition of Waste. Water is one of a number of potential products of microbial decomposition. For it to occur, however, the decomposition process also requires moisture. The waste landfilled at Eagle Mountain will contain approximately 21 percent moisture, which is considered to be low. This level of moisture will limit microbial action and the subsequent decomposition of the waste (GeoSyntec, 1992; Appendix C-5). Consequently, the amount of moisture generated within the proposed landfill as a result of microbial decomposition will be insignificant.

Minimizing Leachate Production and Preventing Leachate Release. State and federal regulations for new landfills require specific design features and operational practices to prevent external sources of water (e.g., precipitation, surface water run-on) from entering landfills and to contain and collect any leachate that is produced (CCR Title 23, 40 CFR Subtitle D). The design and operation of the proposed Project incorporates all state and federal requirements for municipal solid waste landfills. In addition, several design features and operational practices that exceed these regulatory requirements are part of the proposed Project. These items are highlighted in the leachate release mitigation section of this EIS/EIR. The design is essentially unchanged from the design previously approved by the RWQCB. The RWQCB determined that the WDRs would have to be reissued after certification of a new EIS/EIR (see Section 1.4.3.1). A description of the landfill design and operation, including monitoring, is presented in Section 2.1.5. Additional information can be obtained in the Report of Waste Discharge (ROWD) (GeoSyntec, 1992).

When rain does occur, the small amount that contacts with waste will be minimized by the required landfill cover systems (both interim and final cover) and by surface water controls. The interim cover includes both the daily cover and the intermediate cover (applicable where the landfilled waste is inactive for more than 180 days). The three types of landfill covers (daily, intermediate, and final) have different required specifications [CCR Title 23, §2544(b)]. The daily cover consists of at least 6 inches of compacted soil placed over exposed waste during and at the end of each day's landfilling operations. The intermediate cover consists of at least 12 inches of compacted soil, which will be graded to direct surface water off the landfill. The final cover, which is a specific design feature of the landfill, will be constructed in phases as landfilling reaches design grade. Minimum requirements include a competent foundation layer, at least 2 feet thick, that is covered by a 1-foot-thick, low-permeability soil. The low-permeability layer is, in turn, overlain by a 1-foot-thick soil layer that includes erosion protection.

In addition to the cover systems, state and federal regulations require that surface water be controlled. Specifically, landfill designs are required to include measures to: (1) convey surface water around and away from the active portion of the landfill during and after landfill operations, and (2) convey flows and control erosion on the landfill surface after intermediate or final covers have been installed.

The containment of leachate is accomplished through the landfill liner system. Under federal law [40 CFR 258.40(a)(b)], new Class III municipal solid waste landfills (i.e., the proposed Project) are required to be constructed with either: (1) a composite liner, consisting of, at a minimum, a 60-mil-thick, high-density polyethylene (HDPE) and a 2-foot-thick layer of low-permeability soil (i.e., hydraulic conductivity of 10^{-7} centimeters per second [cm/s] or less), and have a leachate collection system that will maintain a level of leachate that is less than 12 inches deep, or (2) an alternative design that satisfies federal performance standards and is specifically approved by the state. In California, the liner systems for Class III landfills must be designed to prevent the degradation of groundwater (Title 23, Chapter 15, §2540C).

On side slopes of the landfill, (i.e., at Eagle Mountain where the landfill sides are steeper than 3 to 1 [horizontal to vertical]), the regulations allow the liner design to differ from what is under the landfill base as long as state and federal performance criteria are met and if a composite liner system is used that consists of both a geosynthetic clay liner and at least a single layer of 60-mil HDPE, or equivalent.

The proposed liner system for the landfill exceeds the regulatory requirements for groundwater protection. A discussion of how the design exceeds these requirements is presented below under mitigation.

Monitoring Requirements. All Class III landfills must have a comprehensive water quality monitoring system to provide the earliest possible detection of a contaminant release to the environment (Title 23, Chapter 15, Article 5). The three principal components of this monitoring system involve the regular sampling and analysis of surface water, groundwater, and soil-pore water in the unsaturated (vadose) zone (i.e., above the water table). The water quality monitoring system for the proposed Project meets the regulatory requirements for all three of these areas, and is described in detail in Appendix C-4.

In this EIS/EIR, these monitoring systems are described in Section 2.1.8 and reiterated below under the discussion of mitigation for leachate releases. Briefly, the groundwater monitoring system is required to include a sufficient number of both upgradient and downgradient monitoring wells at appropriate locations and depths to enable the collection of groundwater samples of the "uppermost" aquifer (Title 23, Article 5, §2595(g) and 40 CFR §258.51(a)). Over much of the Project site, the uppermost aquifer is the bedrock aquifer. Under the eastern portion of the Project site, including the eastern edge of the landfill footprint within Phase 5, the uppermost aquifer is the Chuckwalla aquifer.

The required vadose zone monitoring system consists of an additional collection area under the primary liner (or the bottom of the landfill). This secondary system allows collection and sampling of liquids under the composite liner of the landfill. Lastly, the quality of any surface water body that could be affected by a release from the landfill is also required to be monitored in compliance with 23 CCR for changes in water quality. Water quality monitoring is required to continue after the landfill is closed; specifically for at least 30 years

after closure or until the landfill is determined not to pose a threat to the beneficial use of groundwater.

Impacts. When all of the various site conditions and required operational and design components are considered together, the possibility of a leachate release from the proposed Eagle Mountain landfill is unlikely. The basis for this conclusion is briefly summarized by the following points:

- Little or no leachate will be produced because:
  - The climate is arid (on average, rainfall is less than 4 inches per year and evaporation is more than 150 inches per year)
  - The waste will be dry (on average, the moisture content will be approximately 21 percent)
  - Groundwater inflow will be precluded because the depth to groundwater below the lowest portion of the proposed landfill bottom is at least 100 feet
  - Surface water flow will be kept from entering the landfill, and operational practices will minimize the accumulation of surface water within the landfill resulting from direct precipitation onto the landfill
  - The size of the working face will be minimized (i.e., fewer than 2 acres) to reduce the area of waste exposed at any one time to precipitation
  - Consistent with state and federal requirements, the landfill cover will: (1) prevent infiltration, (2) include erosion protection, and (3) rapidly divert precipitation falling directly onto the cover away from the landfill minimizing accumulation
- Leachate that is produced will be prevented from infiltrating into the subsurface because:
  - A composite liner system, which meets all regulatory requirements, will cover the entire bottom and all sides and benches within the landfill
  - Consistent with state and federal requirements, any leachate that is produced will be collected and removed
- Despite these unfavorable conditions for a scenario in which leachate is produced, accumulates within the landfill, and then leaks through the composite liner, the vadose zone monitoring system will serve to detect the presence of leachate before it reaches the bottom layers of the landfill (i.e., before it comes in contact with the natural subsurface).

- Should leachate evade detection and collection in the vadose zone monitoring system, groundwater will be monitored immediately downgradient of the landfill to identify potential releases, assess the magnitude of the release, and assist in the development of appropriate corrective measures.

- Surface water monitoring will be performed to detect any leachate release to local surface waters. Monitoring surface water will also enable the detection of a leachate release at the surface before contaminants infiltrate into the ground.

Mitigation. Although a release of leachate from the proposed landfill is considered unlikely, mitigation measures have been developed as part of the proposed Project to maximize the protection of the local groundwater quality. These measures involve the incorporation of several design and operational features into the proposed Project that exceed the state and federal regulatory requirements for Class III municipal solid waste landfills that were developed to address much more humid climates than the Eagle Mountains (e.g., in the Pacific Northwest).

Landfill Liner System. Liner systems consist of two basic components: (1) a liner (or barrier) layer to prevent migration of liquids (i.e., leachate) downward or outward; and (2) a drainage layer that allows flow of leachate to a collection sump for removal.

The liner consists of an 80-mil (0.08 inches) HDPE geomembrane (i.e., plastic) material that is constructed by unrolling and continuously heat bonding the overlapping edges of adjacent sheets until a continuous barrier is provided. This geomembrane liner overlays a constructed clay liner; in combination, these liners have a high resistance to water flow.

The proposed liner for the Eagle Mountain Landfill would provide a level of protection from leachate release that would exceed the requirements of state and federal regulations (see Table 2-3). Details of the liner system are presented in Section 2.1.5.1 and Figure 2-9 of this EIS/EIR. Specifically, the liner exceeds regulatory requirements by having under the entire base of the landfill:

- The thickness of the HDPE geomembrane component of the composite liner system be 80 mil instead of only 60 mil.

- A secondary composite liner located beneath the vadose-zone monitoring layer (discussed below) consisting of both an 80-mil HDPE geomembrane and a 0.25-inch-thick geosynthetic clay liner, which has a hydraulic conductivity of 10^{-9} cm/s or less. The secondary composite liner provides additional protection from leachate release and prevents the overlying soil liner from drying out and becoming less effective (i.e., developing cracks due to shrinkage).

On the sides and benches of the landfill, the proposed liner design exceeds the regulatory requirements by having the HDPE geomembrane component of the composite liner system be 80 mil instead of only 60 mil.

Extensive information exists on the performance capabilities of composite liner systems similar to the one proposed for Eagle Mountain Landfill. Studies of the performance have been presented by Faure (1984), Sherard (1985), Fukuoka (1986), Brown, et al. (1987), U.S. EPA (1987), Bonaparte and Giroud (1995), and Giroud et al. (1992). The performance of landfill liners have been confirmed through field monitoring of composite liners by Bonaparte and Gross (1990, 1993) and Workman (1993). Bonaparte, et al. (1995) presented operational data for 26 working landfill cells containing composite liners incorporating GCLs. Their study concluded that the efficiency of a composite liner system with a GCL may be greater than 99.90 percent.

The durability and expected long-term performance of composite liners in the presence of municipal solid waste leachate has been documented by a number of researchers (Appendix C-3). This includes tests of liners in laboratories using strong leachates, and in the field. Bonaparte (1995) concluded that the service life of a HDPE membrane used as a component of a liner system in municipal solid waste landfill designed and constructed in compliance with regulatory requirements is expected to exceed the time period in which leachate and gas would be produced in a landfill.

Leachate Collection and Removal System. The leachate collection and removal system (LCRS) on top of the composite liner is constructed of a coarse, permeable gravel that allows leachate that reaches the liner system to flow rapidly to a leachate collection sump. Leachate is pumped from the sump and disposed of in appropriate, approved facilities. The LCRS is described in detail in Section 2.1.5.2 and Figure 2-13. The design of the LCRS meets or exceeds all related state and federal requirements. The landfill will have a continuous LCRS above the composite liner. For the purpose of designing the LCRS, the amount of leachate generation is very conservatively estimated to be 4,745 gallons per year per acre of landfill area (GeoSyntec, 1992). This value is much higher than would ever be anticipated at Eagle Mountain (see above discussion on leachate generation). The proposed LCRS has been developed to accommodate twice the maximum assumed amount or 9,490 gallons per year per acre. The LCRS will also be 100 times more permeable and twice as steep as required by regulations.

Vadose Zone Monitoring System. California law requires a vadose zone monitoring system in all new Class III landfills to provide for the earliest possible detection of a potential leachate release (i.e., the detection of a potential release before it reaches groundwater). The vadose zone monitoring system incorporated into the proposed Project design meets the requirements under CCR Title 23, Chapter 15, Section 2550.7(d). The system will enable the detection of potential releases before they reach the lower geomembrane/geosynthetic clay barrier. The proposed design also includes a vadose zone gas monitoring system within the foundation layer of the liner that is not required by law. The details of both of these systems are presented in Sections 2.1.8.1 and 2.1.8.2.

Groundwater Monitoring System. As a backup to the vadose zone monitoring system, the groundwater underlying the proposed landfill would also be monitored to detect potential

releases of leachate (see Section 2.1.8.4). The proposed groundwater monitoring system for the Project would meet the requirements of CCR Title 23, Chapter 15, Article 5, and is detailed in Section 11 of GeoSyntec (1992) and updated in GeoSyntec (1996). The components of this monitoring system were incorporated into the Monitoring and Reporting Program of the WDRs, which were adopted by the RWQCB on May 17, 1994 (Board Order No. 94-036) for the first four proposed landfill phases.

The design of the monitoring system is based on the conclusions of the site-specific hydrogeological investigations reported in GeoSyntec (1992, 1993). These investigations concluded that the bedrock aquifer underlying the landfill footprint is characteristic of a porous medium. Accordingly, the principles of subsurface flow through a porous medium were used in the interpretation of the local groundwater conditions and were used to determine the proposed locations and general specifications (i.e., depth and well-screen interval) of the groundwater monitoring wells.

The proposed monitoring system involves the phased installation and sampling of 36 monitoring wells (Appendix C-4). Specifically, water quality in the most shallow aquifer (i.e., in the local bedrock) will be monitored in nine upgradient (background) and 27 downgradient wells, that will be progressively installed as the landfill is developed through the first four phases. As Phase 5 is developed, eight previously installed wells will be decommissioned and properly abandoned, and five new monitoring wells will be added to the system downgradient of the Phase 5 area. The location of these Phase 5 monitoring wells are subject to review and approval by the RWQCB.

Downgradient wells will enable the collection of samples that are representative of groundwater conditions at the "point of compliance," which is defined by the state as the downgradient limit of the landfill (§2550.5(a)). The proposed groundwater monitoring network is shown graphically in GeoSyntec (1996), and in Appendix C. In general, monitoring wells will be placed along the downgradient landfill boundary at locations that will enable the detection of contaminants in groundwater that flows from: (1) beneath each of 12 LCRS sumps included in the landfill design; (2) beneath natural canyons within the landfill footprint; and (3) along the alignment, or in the vicinity, of the geologic faults at the site.

Sampling, analysis, and reporting of the monitoring results would be part of the operational practices of the proposed Project. These practices would comply with RWQCB requirements, which specifically identify and describe: (1) the required monitoring parameters, including physical and chemical water-quality indicators (i.e., the constituents of concern), landfill gas, and the rate and direction of groundwater flow; (2) sampling and analytical methods, including laboratory requirements and quality control procedures; (3) recordkeeping and reporting; and (4) schedules for monitoring and onsite inspections. Monitoring well construction would be in accordance with California standards as stated in Department of Water Resources (DWR) Bulletins 74-81 and 74-90 (California Department of Water Resources, 1981; 1990).

To ensure that the "uppermost" aquifer is adequately monitored (i.e., early detection of a potential release and sufficient sample collection) the screens of the monitoring wells will be designed to extend over the uppermost approximately 50 to 90 feet of the bedrock aquifer (GeoSyntec, 1992). Although there are no specific data on the vertical component of hydraulic gradient at the Project site, the long screen lengths will enable the groundwater monitoring program to account for the potential effects of vertical gradients. The actual screen length of a particular well will be determined at the time of well construction based on the hydrogeological conditions encountered (i.e., each well will be designed to enable the collection of groundwater samples that are representative of groundwater flowing from under the landfill) (GeoSyntec, 1992).

Final Cover. The final cover for the Eagle Mountain Landfill provides a level of protection from the infiltration of precipitation and erosion that exceeds the requirements of state and federal regulations (see Table 2-3). Details of the cover design are presented in Section 2.1.5.4 and Figure 2-12 of this EIS/EIR. In addition to meeting the regulations by having all of the appropriate infiltration and erosion protection layers, the final cover exceeds the regulations by additionally having:

- At least 18 inches of the lower-most, 2-foot foundation layer composed of low-permeability (hydraulic conductivity $\leq 1 \times 10^{-5}$ cm/s), compacted soil. (There are no permeability requirements for this layer in the regulations.)
- A 40-mil flexible geomembrane with an equivalent hydraulic conductivity of 10^{-9} cm/s
- A UV-stabilized, nonwoven, geotextile cushion layer to protect the geomembrane
- A 1-foot-thick erosion protection layer consisting of cobble- and boulder-sized material with an average diameter of approximately 18 inches

The synthetic geomembrane material, which will be used instead of the low-permeability soil cover, is considered to be a better option and will exceed requirements because it is: (1) less permeable than a conventional compacted soil layer; (2) less affected by the arid climate (i.e., will not shrink and crack when dry as would a conventional clay liner); and (3) flexible and therefore better able to withstand the potential strain that could occur if the waste compresses or settles.

Operational Practices. As described in Section 2.1.6.1, the landfill will be constructed in five contiguous phases. Each of these phases, in turn, will be divided into 10- to 30-acre subphases to facilitate construction of the liner system and optimize site operations. In addition, the working area of the landfill will be limited to fewer than 2 acres, depending on the volume of incoming waste, to minimize direct exposure of the waste to the environment. At any given time, therefore, only an area of 2 acres or less would lack a cover of at least 6 inches of compacted soil. The remainder of the landfill area where waste has been landfilled would be covered with either daily, intermediate or final cover.

Significance After Mitigation. With the implementation of the proven regulatory requirements for landfill containment and the added protection afforded by the mitigation measures described above, groundwater quality would not be affected by leachate releases from the

Eagle Mountain Landfill, and therefore, impacts would be reduced to below the level of significance. Similarly, leachate from the proposed landfill would not contaminate public water supplies, and the mitigation measures incorporated into the proposed action would reduce impacts to below the level of significance.

Groundwater Quality Degradation from Landfill Gas. Landfill gas (LFG) is composed primarily of methane and carbon dioxide, which are the natural products of microbial decomposition of landfilled waste. LFG can also contain forms of volatile organic compounds (VOCs) that could end up in the landfill in small quantities (e.g., from small spent containers of home cleaning fluids, solvents, paint and thinners). In general, LFG that is released to the subsurface will ultimately either: (1) escape to the atmosphere; (2) degrade to carbon dioxide and water; (3) adsorb onto soil particles; (4) condense and form liquid, which like leachate would contain dissolved substances from the waste or its decomposition; or potentially (5) migrate to groundwater in the gas phase if the LFG contains dense organic compounds (i.e., organic compounds, which when they reach a sufficiently high concentration in the gas phase are heavier than water vapor).

Impacts. With respect to the potential effects on groundwater quality in the vicinity of the proposed Project, the most important consequences of a release of LFG are the fourth and fifth points listed above. LFG condensate is particularly important. Microbial decomposition, which produces the LFG, generates heat in the decomposition process. As a result, LFG is produced in a relatively warm environment within the landfill. If there is a release of LFG, a portion of the gas will condense upon contact with the relatively cooler subsurface outside of the landfill. This condensate could migrate to the water table if it is present in sufficient quantities.

The second means by which a release of LFG could affect groundwater quality involves the direct transfer of contaminants from the gas to the groundwater. Considerable research has been performed to investigate this potential process (Stevens, et al., 1986; Mercer and Cohen, 1990; Mendoza and Frind, 1990a and 1990b). In general, the downward migration of LFG and subsequent transfer of contaminants from the LFG to groundwater has not been found to be a common phenomenon primarily because LFG naturally travels toward areas of lower pressure (i.e., the atmosphere). LFG must first contain high concentrations of VOCs to be sufficiently dense to migrate downward. Stevens et al. (1986) concluded that a gas that has a density that is more than 10 percent denser than the water vapor in the unsaturated (vadose) zone could behave in this manner. Given a sufficiently dense LFG, the prevailing physical and chemical conditions (e.g., temperature, chemical concentrations) in both the LFG and the groundwater must then be compatible for the transfer of contaminants to occur.

For LFG to affect groundwater quality significantly, LFG must first be produced and then be released in large quantities to the subsurface. Ham (1990) examined the potential for LFG generation at the proposed Project landfill. He concluded that LFG production at Eagle Mountain would be relatively low (approximately 3.3 cubic feet per year per 100 pounds of waste) based primarily on the low available moisture. Actual gas generation at landfills in Riverside County is 3 to 4 times less than the value estimated by Ham (1990).

LFG that is produced would be prevented from escaping through the bottom and sides of the landfill by the composite liner system specially designed for this landfill (GeoSyntec, 1996; Appendix C). In addition, the landfill design incorporates an LFG collection and recovery system to manage the LFG that is produced. The design of this LFG system meets all regulatory requirements, and is described in detail in GeoSyntec (1992) and summarized in Section 2.1.5.

If a release of LFG were to occur, groundwater quality would not be significantly affected. This conclusion is based on the following:

- The amount of LFG that is available to be released will be small because the LFG production rates will be low and LFG collection systems will be incorporated into the landfill design.

- Only a fraction of the any release of LFG will condense into a liquid; accordingly, the volume of liquid that could be produced from LFG will be low. Small volumes of this liquid will not be able to reach the water table, let alone significantly affect the groundwater quality. For any liquid introduced to the subsurface, a minimum volume is required before the liquid can flow (i.e., the amount required to elevate the moisture content of the unsaturated bedrock above the level [field capacity] where water is held within the fractures by capillary forces and essentially unable to flow freely). At Eagle Mountain, the depth to groundwater under the lowest elevation of the proposed landfill is at least 100 feet; and the unsaturated bedrock is very dry due to the arid conditions. A considerable volume of water is therefore required to initiate flow through the bedrock that reaches the water table. Such a volume is not likely to be produced from LFG condensate. If it were, it would be detected by the vadose zone monitoring system, which will underlie the entire base of the landfill.

- Organic vapors are unlikely to be present in sufficient concentrations to result in a dense LFG. Organic chemicals that would be the source of those vapors will not be accepted for disposal at the landfill, and their presence would be substantially reduced by the three levels of waste inspection conducted prior to landfilling.

Mitigation. In addition to the LFG containment and control systems incorporated in the design of this landfill, a vadose zone gas monitoring system is included. This added level of monitoring for LFG exceeds the regulatory requirements for environmental monitoring at municipal solid waste landfills in California.

Significance After Mitigation. With the implementation/construction of the subsurface protection components of the proposed landfill design (e.g., the composite liner and liquid barrier, LFG collection and removal system) and the added vadose zone gas monitoring system, groundwater quality will not be significantly affected by landfill gas produced by the landfill, and impacts will be reduced to a level below significance.

Contaminant Releases to Groundwater from Landfill-Support Facilities. The principal landfill-support facilities where contaminants could be released to the subsurface include the areas for: (1) rail container unloading, (2) rail container washing and storage, (3) vehicle and equipment maintenance, and (4) temporary storage of hazardous waste. The potential environmental impacts associated with these facilities are addressed in Section 4.2, Public Safety. Key issues related to the potential for groundwater quality degradation, however, are discussed here.

Impacts of Rail Container Unloading Facilities. All waste arriving by rail will be received at one of two planned rail yards (Section 2.1.7.1). The primary yard (i.e., Rail Yard I) will be located in Planning Area 2, and the secondary yard (i.e., Rail Yard II) will be constructed in Planning Area 3 (see Figures 2-5 and 2-6). At these yards, the waste containers will be lifted off the rail cars and placed on special vehicles for transport to the landfill; the containers will be temporarily stored in these areas if no transport vehicles are immediately available. During temporary storage, which would be typically less than 12 hours and no more than 36 hours, the containers would remain closed until arriving at the landfill. As discussed in Section 2.1.7.2, all incoming loads will be inspected to intercept liquid wastes; and the solid wastes will be relatively dry (approximately 21 percent moisture on average; see above). In addition, the containers will be enclosed to prevent the release of waste.

Groundwater quality would not be significantly affected by the handling or temporary storage of the waste containers at these facilities. This conclusion is based primarily on: (1) the dry nature of the waste; (2) the enclosed aspect of the container design and the operational practice of not opening the containers until they reach the landfill; (3) the arid climate, which is conducive to high evaporation rates from the waste itself (further reducing the amount of liquids present), and from the ground surface and the subsurface (i.e., the evaporation rate during much of the year is likely to be higher than the infiltration rate); and (4) the characteristics of the groundwater environment (i.e., the considerable depth to groundwater and the relatively low hydraulic conductivity of the unsaturated soil).

Specifically, Rail Yard I would be located in an area that is underlain by a thin (approximately 30 to 40 feet thick) layer of unconsolidated (debris flow) materials, which are unsaturated. Locally, these debris-flow deposits typically have relatively low permeability because they contain a mixture of both fine and coarse sediments (GeoSyntec, 1992). Data from nearby piezometers (P-4 and P-5) indicate that groundwater at this location is deep and within the bedrock, approximately 470 feet below the ground surface. In Planning Area 3, where the secondary Rail Yard II is proposed, the ground surface is characterized as Unit II alluvium (See Section 3.9.1), which contains both considerable fine-textured materials and (natural) desert pavement. The overall thickness of the alluvium is at least 800 feet (DH-424 well log) and the depth to groundwater is approximately 340 feet (based on MW-1 data).

Impacts of Maintenance Facilities. As described in Section 2.1.7.4, the maintenance of onsite vehicles and equipment will occur at the existing maintenance building located in Planning Area 2 and additional facilities that will be constructed in Planning Area 3 (see Figure 2-6). The facilities at both of these areas will be used to provide fuel, oil, lubricants

and coolants to various vehicles and equipment. The principal features of the fueling facilities consist of a 55,000-gallon diesel fuel storage tank and a 13,750-gallon gasoline storage tank. Both of these tanks will be above ground and located in Planning Area 2. If there were to be a release of any of the liquids stored at these facilities, the effect on groundwater degradation could be significant depending on the quantities released.

Impacts of Hazardous Waste Storage Areas. Hazardous waste (defined in Section 3.2) will not be accepted for disposal in the Eagle Mountain Landfill. Hazardous wastes detected in incoming shipments will not be unloaded, and will be returned to the sender. Provision will be made, however, to store temporarily onsite any hazardous wastes detected in the solid waste stream at the landfill site during waste screening. In addition, local household- and maintenance-derived hazardous wastes (e.g., pesticides, cleaners, solvents, paint, batteries, waste motor and lubricating oils, aerosol cans) will also be stored temporarily onsite. It is estimated that the amount of hazardous waste that could be generated from the maintenance of landfill support equipment and vehicles will be approximately 17 tons per year (See Section 4.2. below). Other locally derived sources would be only a small fraction (<1 ton/year) of this amount. If there were to be a release of hazardous liquids stored at these facilities, the effect on groundwater degradation could be significant depending on the quantities involved.

Mitigation. The mitigation measures described in Section 4.2 will apply. Mitigation will involve adherence to the regulatory requirements that pertain to the unauthorized release of hazardous or other substances that could degrade groundwater quality. These requirements include rapid implementation of reporting; containment; and, potentially, removal actions. The hazardous waste storage areas would be specially designated and constructed in accordance with applicable existing regulations, and would be located near maintenance buildings and waste inspection areas. No hazardous wastes would be stored longer than 90 days before being transported to an offsite permitted facility for treatment and/or disposal by a licensed hazardous waste transportation or disposal company in accordance with CCR Title 22 §66508. In addition, at the landfill-support facilities where substances that could cause groundwater quality degradation are stored or handled (e.g., aboveground fuel tanks), the regulatory requirements for containing and monitoring these substances would be followed.

Significance After Mitigation. The effects of the landfill support facilities on groundwater quality would not be significant after mitigation.

Contaminant Release to Groundwater from Townsite Facilities. The environmental consequences associated with hazardous waste generated by commercial and/or industrial establishments within the Townsite are addressed in Section 4.2, Public Safety, and are not reiterated here. Apart from these potential establishments, the principal Townsite facility that could affect local groundwater quality is the wastewater treatment plant.

Impacts of Wastewater Treatment Plant. Under the proposed Project, the treatment plant would treat approximately 87,000 gallons per day (gpd) of Townsite-derived wastewater

(e.g., water from domestic and commercial sinks, showers, and toilets). This amount is well within the design capacity of 271,000 gpd, but more than the currently permitted amount of 35,000 gpd. The treatment process involves primary settling and, during higher flows, organic digestion in an Imhoff tank. The water is subsequently discharged to a series of unlined aerobic ponds, which contain bacteria and algae in suspension providing additional treatment. To address the potentially heavy contribution of cooking oil and grease periodically introduced from the correctional facility, additional microbes are added to the wastewater prior to discharge to the aerobic ponds.

Although the ponds are unlined, the treated water primarily evaporates from these structures. Evaporation is enhanced by the operational practice of sequentially transferring water between ponds. In addition, the bottoms of the ponds historically have not been cleaned of fine sediment, which has built up over the past 30 years of operation. This fine-textured material effectively lines the bottoms of the ponds and reduces infiltration.

The amount of water loss from these ponds through evaporation is also considered to be significant because the average annual evaporation is approximately 156 inches (GeoSyntec, 1992). When this value of evaporation is combined with the total surface area of all ten ponds (i.e., approximately 630,000 square feet), the potential evaporative loss is approximately 185 ac-ft/yr. This is almost twice as much as the 100 ac-ft/yr of treated water that would be discharged to these ponds under the proposed action.

Even if there were no evaporation, however, and all of the treated wastewater (i.e., 100 ac-ft) percolated into the subsurface, the effect on groundwater quality would not be significant for the following reasons:

- The water infiltrating would represent treated water, with the concentrations of water quality parameters in compliance with the operational permit from the RWQCB.

- The arid climate would cause some of the percolating water to be evaporated directly from the subsurface, thus reducing the amount available to reach groundwater.

- The depth to groundwater is considerable. The treatment plant is located southeast of the Townsite where the thickness of the underlying alluvium is on the order of 200 feet. Groundwater at this location is most likely in rock at depths greater than 400 feet (based on water level data in the School Well, P-9 and P-10).

- The thick (200 feet) unsaturated and unconsolidated overburden acts to treat the water further by natural filtration.

- The quality of the groundwater in the bedrock aquifer is naturally poor (see Section 3.1.3); concentrations of inorganics in the wastewater are not likely to be significantly different than the native groundwater.

Mitigation. The effect of the Townsite treatment plant on groundwater-quality degradation is not considered to be significant. The plant is currently operating in compliance with the operational permit from the RWQCB and will continue to do so under a new permit when issued. Currently, the plant is inspected on an annual basis by the RWQCB; no additional operational or design requirements are anticipated under a new permit.

At some time in the future, it could be economical to implement a program of wastewater reuse in which the treated water is used for such purposes as landscape irrigation or dust control. Wastewater reuse will only enhance the amount of treated wastewater that is eventually evaporated, and further reduce the potential for groundwater-quality degradation.

Significance After Mitigation. The effect of the Townsite wastewater treatment plant on groundwater-quality degradation would not be significant and, therefore, impacts are below the level of significance.

Groundwater-Quality Degradation in Joshua Tree National Park. Much of the Eagle Mountains surrounding the Project site are within the boundaries of JTNP. The potential for water quality degradation is discussed below.

Impacts to JTNP. As discussed in Section 3.1.1.2, groundwater flows southeast from the proposed Project site to the central portions of the Chuckwalla Basin (Figure 4.1-2). In particular, groundwater does not flow from the proposed Project site to any springs in the Eagle Mountains or to the Coxcomb Mountains. As a result, groundwater does not flow from the proposed Project site toward any portion of JTNP. The quality of the groundwater underlying JTNP will therefore not be affected by the proposed project.

Mitigation. No mitigation is required.

Significance After Mitigation. The proposed project will not affect the quality of groundwater underlying JTNP and, therefore, impacts are below the level of significance.

Water Quality Degradation of the Colorado River and Groundwater in the Coachella Valley. The Colorado River and the Salton Sea are two of the most visible and well known water resource features in southeastern California. The Colorado River Aqueduct, which conveys Colorado River water to urban areas in Southern California, is another resource feature in close proximity to the Project site. Operated by the Metropolitan Water District of Southern California, the aqueduct transitions from a open, cement-lined channel to underground pipes approximately one-half mile east of the northeast corner of the Specific Plan boundary (see Figure 3.5-3). The aqueduct continues underground in a southerly direction parallel to the eastern edge of the Project site. Consequently, the aqueduct is protected underground where it crosses the Eagle Mountain Road extension and the rail line. Although the aqueduct pipes are underground, the water in the aqueduct will not be affected by groundwater because the pipes are less than 25 feet below the ground surface and the depth to groundwater is at least 350 feet in the same vicinity (i.e., at Piezometer P-11).

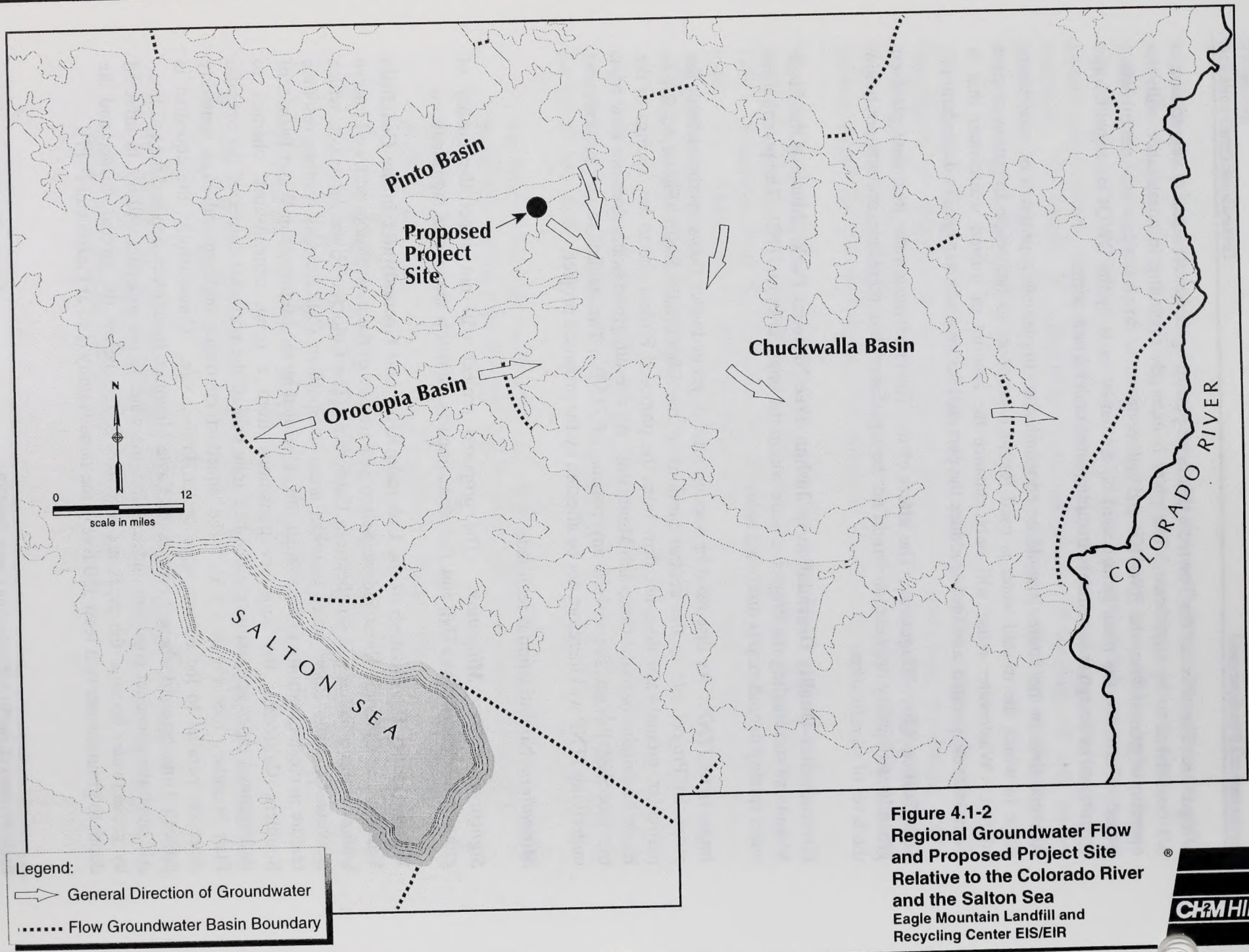


Figure 4.1-2
Regional Groundwater Flow and Proposed Project Site Relative to the Colorado River and the Salton Sea
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2MHILL

Impacts to the Colorado River. As discussed in Section 3.1.1.2, groundwater flows generally southeast from the Project site to the central portions of the Chuckwalla Basin (Figure 4.1-2). Available water level data for the eastern Chuckwalla Basin are scarce, but it is understood that groundwater from the Chuckwalla Basin flows eastward through the Palo Verde Mesa Basin to the Palo Verde Basin and eventually to the Colorado River (see Section 2.1.1). It is, therefore, conceivable that a path of groundwater flow could extend from the Project site to the Colorado River.

It is not conceivable, however, that a release from the Project site to groundwater could affect the water quality of the river. The following factors, considered either individually or combined, preclude the reasonable possibility of any release from the Project site affecting the water quality of the river:

- Before a leachate release from the proposed Project can significantly affect the water quality of the Colorado River, the leachate must first significantly affect the groundwater that discharges into the river. As discussed in Section 4.1.2.1, groundwater quality will not be significantly affected by the proposed Project. The volume of leachate that would significantly affect the groundwater quality everywhere along the groundwater flowpath between the Project site and the river would require a large undetected and unmitigated continuous release. Given the proposed design and operation of the landfill and the water quality monitoring that will occur, such a large unmitigated continuous source of leachate from the landfill is not considered possible (see Section 4.1.2.1).

- The time required for groundwater to flow the considerable distance between the Project site and the river is so great that geologic conditions could change in the meantime. Specifically, it would take roughly 700,000 years for a given fluid particle of groundwater to travel the 56 miles from the proposed Project site to the Colorado River. The principal assumptions underlying this estimate include the following: (1) the horizontal component of hydraulic gradient over the 56 miles between the Project site and the river is approximately 0.002 (i.e., a change in groundwater-level elevation of approximately 475 feet over 56 miles), based on the difference in elevation between the groundwater under the landfill footprint (approximately 750 feet above mean sea level [msl]) and the Colorado River (approximately 275 feet above msl at Blythe); and (2) conservative values of hydraulic conductivity and porosity for the Chuckwalla aquifer of 30 feet per day and 15 percent, respectively (see Section 3.1.2 for a discussion of these values; the details of the analysis are presented in Appendix C-1).

Impacts to the Coachella Valley and the Salton Sea. There would be no Project-induced impacts to the Coachella Valley or the Salton Sea because the direction of groundwater flow from the Project site is south and easterly away from these areas (see Figure 4.1-2).

Mitigation. Because there would be no Project-induced effects on the water quality of the either the Colorado River or the groundwater of the Coachella Valley, no specific mitigation measures would be necessary for the proposed Project. The mitigation measures that will be implemented to protect local groundwater, described above, will adequately address this issue.

Significance After Mitigation. The potential effect on the water quality of the Colorado River and the groundwater of the Coachella Valley that results from the proposed Project would not be significant.

4.1.2.2 No Action Alternative

Impacts. This alternative would preclude the occurrence of any potential impacts to groundwater quality at the Project site, and would result in potential continued use of existing landfills in Southern California.

Mitigation. No mitigation measures are required for this alternative.

Significance After Mitigation. No significant effects on the groundwater quality attributable to the Project would occur.

4.1.2.3 Reduced Volume of Onsite Disposal Alternative

Impacts. The potential impacts under this alternative would be identical to those of the proposed Project. Under this alternative, the composition of the waste and the design, construction, and operation of the landfill (including all of the surface water and leachate containment and control systems, the leachate and landfill gas collection systems, the vadose and groundwater monitoring systems, and the landfill cover system) would be identical to the proposed Project. Therefore, the potential for a leachate or gas release from the landfill would not change from the proposed Project. In addition, there would be no change in the potential for significant groundwater quality degradation resulting from either the landfill-support or Townsite facilities.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Impacts would be reduced to below the level of significance.

4.1.2.4 Alternate Road Access Alternative

Impacts. The potential impacts under this alternative would be identical to those of the proposed Project. Under this alternative, the composition of the waste and the design, construction, and operation of the landfill (including all of the surface water and leachate containment and control systems, the leachate and landfill gas collection systems, the vadose and groundwater monitoring systems, and the landfill cover system) would be identical to the

proposed Project. Therefore, the potential for a leachate or gas release from the landfill would not change from the proposed Project. In addition, there would be no change in the potential for significant groundwater quality degradation resulting from either the landfill-support or Townsite facilities.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Impacts would be reduced to below the level of significance.

4.1.2.5 Rail Access Only Alternative

Impacts. The potential impacts under this alternative would be identical to those of the proposed Project. Under this alternative, the composition of the waste and the design, construction, and operation of the landfill (including all of the surface water and leachate containment and control systems, the leachate and landfill gas collection systems, the vadose and groundwater monitoring systems, and the landfill cover system) would be identical to the proposed Project. Therefore, the potential for a leachate or gas release from the landfill would not change from the proposed Project. In addition, there would be no change in the potential for significant groundwater quality degradation resulting from either the landfill-support or Townsite facilities.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Impacts would be reduced to below the level of significance.

4.1.2.6 Landfill on Kaiser Land Only Alternative

Impacts. The potential impacts under this alternative would be identical to those of the proposed Project. Under this alternative, the composition of the waste and the design, construction, and operation of the landfill (including all of the surface water and leachate containment and control systems, the leachate and landfill gas collection systems, the vadose and groundwater monitoring systems, and the landfill cover system) would be identical to the proposed Project, but would be tailored to address the smaller size of the landfill that would result under this alternative. Therefore, the potential for a leachate or gas release from the landfill would not change from the proposed Project. In addition, there would be no change in the potential for significant groundwater quality degradation resulting from either the landfill-support or Townsite facilities.

Mitigation. The mitigation measures are identical to those associated with the proposed Project.

Significance After Mitigation. Impacts would be reduced to below the level of significance.

4.1.2.7 Landfill Development/No Townsite Development Alternative

Impacts. The potential impacts under this alternative would be largely identical to those of the proposed Project. The potential for contaminant release from Townsite facilities would be the same as under the No-Action Alternative.

Under this alternative, the composition of the waste and the design, construction, and operation of the landfill (including all of the surface water and leachate containment and control systems, the leachate and landfill gas collection systems, the vadose and groundwater monitoring systems, and the landfill cover system) would be identical to the proposed Project. Therefore, the potential for a leachate or gas release from the landfill would not change from the proposed Project. In addition, there would be no change in the potential for significant groundwater-quality degradation resulting from the landfill-support facilities.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Impacts would be reduced to below the level of significance.

4.1.3 Groundwater Use

The effects of the proposed action and alternatives on groundwater use are presented in this section. Specifically, the potential impacts associated with five issues related to groundwater use are examined: (1) groundwater depletion; (2) interference with groundwater recharge; (3) the use of large amounts of groundwater; (4) wasteful use of groundwater; and (5) ground-surface subsidence. For each of these topics, the potential impacts are identified, mitigation measures are described, and the significance of the impacts after mitigation is presented.

4.1.3.1 Proposed Action

The potential impacts to groundwater resources as a result of the demand for groundwater by the proposed action are evaluated in this section.

Groundwater Depletion. This section evaluates the potential for significant declines in groundwater levels as defined above in Section 4.1.1.2.

Groundwater Source. Two of the four existing water wells (CW-3A and CW-4) owned by Kaiser would be used to meet the nondrinking water requirements of the proposed Project. The two wells are located approximately 4 miles east of the Project site. The screens (intake portions of the wells) of both wells are entirely in the Chuckwalla aquifer (see Figure 3.1-3). Specifically, CW-3A is 580 feet deep, with well screen between 320 and 560 feet below the ground surface. Although this 16-inch well is currently on standby service, it is capable of producing 1,100 gpm when pumping.

As the well currently used for water at the Project site, CW-4 produces 1,225 gpm through its 16-inch casing. Although drilled to 650 feet, the total depth of CW-4 is only 500 feet, with well screen located between 170 and 410 feet and between 494 and 500 feet below the ground surface.

Groundwater Demand. The demand for groundwater is estimated to be approximately 245 ac-ft during the initial 6-month landfill construction phase. Upon commencing operation, the landfill would require between 185 ac-ft/yr during the first year and 1,070 ac-ft/yr when the rate of landfilling peaks at 20,000 tpd (Morrison Knudsen, 1995; see also Section 4.12.2). The Townsite water demand is estimated to be 173 ac-ft/yr (see Section 4.12.2.1). These values are presented in Table 4.1-1, which summarizes the maximum annual demands associated with the proposed Project.

Table 4.1-1
Summary of Maximum Annual Water Use by the Proposed Project

Activity	Use in Gallons	Use in Ac-Ft
Landfill Operations (previous EIS/EIR)[1]	642,674,800	1,972
Landfill Operations (currently proposed Project)[2]	348,621,663	1,070
Townsite[3,4]	56,474,900	173
Total Maximum Annual Water Use (current Project)	405,036,063	1,243

1. Source: BLM and County of Riverside, 1992
2. Source: Morrison Knudsen, 1995
3. Townsite water demand has been adjusted to prevent double counting of personnel employed for operation of the landfill (i.e., water demand equals 807 total population minus 163 landfill personnel and the difference multiplied by 240 gal/person/day). In addition, the anticipated Townsite commercial water use is assumed to be "neighborhood light" with a demand equivalent to 1,100 gallons/acre.
4. Townsite water demand was not included in previous EIS/EIR.

The total maximum annual demand is 1,243 ac-ft, which represents a 54 percent (or 902 ac-ft/yr) reduction in water use by the proposed landfill operations over the previous EIS/EIR (BLM and County of Riverside, 1992). The reduction in water demand in the proposed action results from a concerted effort to minimize overall water use by the Project. Specifically, since the previous EIS/EIR was certified in 1992, the following measures have been incorporated (see Section 2, Project Description): (1) the liner design includes a geosynthetic liner for the side slopes where a compacted clay liner was previously proposed; (2) access roads will be paved, minimizing the water requirements for dust suppression; and (3) alternatives to water will be used as dust suppressants.

Impacts. The effect of pumping the maximum Project demand for groundwater (1,243 ac-ft/yr) throughout the duration of the Project will not significantly deplete groundwater resources. This conclusion is based on the results of specific analyses, presented below, that indicate the Project will not cause: (1) the lowering of the static

groundwater surface in existing (non-Project) wells to a level that renders the wells unusable (defined in Section 4.1.1.2); (2) overdraft of the Chuckwalla Basin; (3) cessation of spring flow; or (4) degradation of the quality of water pumped from existing wells.

Groundwater-Level Decline. Groundwater pumping for the proposed Project will not cause water levels in the Chuckwalla Basin to decline significantly because the Project's anticipated maximum demand for groundwater is only 30 percent of the amount that Kaiser pumped from its Chuckwalla wells in the late 1960s (and is only slightly more than twice what is currently pumped by Kaiser). From the late 1960s to the late 1970s, Kaiser pumped as much as 4,178 acre-feet per year from the Chuckwalla aquifer. Throughout that period, the aquifer was not considered to be in overdraft (Mann, 1986). In 1979, with Kaiser continuing to pump almost three times as much as the maximum demand for the proposed Project, the California Department of Water Resources concluded that the water levels in the Chuckwalla Basin had not declined significantly (California Department of Water Resources, 1979).

Mann (1986) investigated the historical changes in water levels in the Kaiser wells and concluded that the rate of decline has been low. Specifically for the 17-year period between 1969 and 1986, the total water level decline in Kaiser's Well No. 1 (CW-1) was 8 feet, or less than 0.5 foot per year on average. Mann (1986) also determined that the water level decline in Kaiser's Well No. 3 (CW-3) averaged less than 1.2 feet per year for a similar 22-year period between 1964 and 1986. The gradual lowering of water levels in these wells was directly attributed to Kaiser pumping and was not considered to be the result of agricultural pumping in the Desert Center area. These observations support the conclusion that pumping for the proposed Project will lower the static water levels in existing wells by no more than a fraction of a foot per year at the most (and potentially not at all at the least). This conclusion is based on the fact that the Project demand for groundwater will be less than half (i.e., 42 percent) of the average Kaiser pumping from the Chuckwalla aquifer between 1964 and 1986.

To confirm this conclusion, the local groundwater conditions were simulated using a computer to assess how far water levels could drop in existing (non-Project) water wells as a result of pumping the two wells that will be used to supply the proposed Project (CW-3A and CW-4). Specifically, the model MICRO-FEM (Hemker and van Elburg, 1995) was used to approximate changes in groundwater levels in the western Chuckwalla Basin under very conservative assumptions of existing conditions. A complete description of the analysis, including the various parameters and associated values used in the simulation, are presented in Appendix C-1.

The groundwater conditions simulated and the values of aquifer parameters used as input were as conservative as possible to determine the maximum decline in water levels. Specifically, the amount of groundwater available to the pumping wells was restricted to the volume stored in the aquifer; and it was assumed that there was no regional hydraulic gradient. In addition, the value of hydraulic conductivity used in the simulations was the highest available, and the values of specific yield and aquifer thickness were the lowest of their respective ranges of available values.

The nearest non-Project water supply well (with respect to the Project wells), which serves as a point of reference for monitoring water level declines in the western Chuckwalla Basin, is located approximately 12,000 feet southwest of CW-3A and approximately 12,350 feet west-southwest of CW-4 (Figure 4.1-3). This well has the state well designation 4S/15E-16 and is used for domestic water supply. This well is approximately 400 feet deep (Correspondence from Laurence and Donna Charpied, to Thomas Peters, CH2M HILL, October 1995); and, based on the depth to static water in a monitoring well located on the same property, groundwater was approximately 280 feet below the ground surface at this location in March 1993. Therefore, the amount of water in this supply well is currently estimated to be at least 100 feet because there is no record of an increase in local pumping.

Project pumping was simulated to determine the maximum amount of water-level decline that could occur in well 4S/15E-16. In addition, water-level declines were simulated at two arbitrary points 5 miles south-southeast and 10 miles southeast from CW-3A and CW-4 to represent general areas in the western Chuckwalla Basin were wells are located. The simulated conditions consisted of both Project wells pumping at rates that result in the maximum annual demand being achieved over a 1-year period of continuous pumping. The results, summarized in Table 4.1-2, were obtained for 1, 10, and 100 years, and indicate the following:

- The maximum groundwater-level decline after pumping continuously at the maximum demand rate for 100 years is approximately 15 feet (i.e., less than 2 inches per year) in the nearest existing non-Project well.

- At distances of 5 and 10 miles from the Project wells (e.g., in the Lake Tamarisk area), the decline in groundwater levels in the Chuckwalla aquifer would be less than 8 and 3 feet, respectively over a 100-year period.

The significance criterion for substantial depletion was defined above (see Section 4.1.1.2) by the amount (depth) of water that must remain in a well for the well to be functional. This amount has been determined to be 40 feet (see Appendix C-1). The nearest existing (non-Project) well (4S/15E-16) was estimated to have at least 100 feet of water in 1993. A reduction of 15 feet would, therefore, not significantly affect this well because at least 85 feet of water would remain. Other wells in the area are similarly unlikely to be significantly affected as a result of Project pumping.

Overdraft. The determination of whether or not pumping the maximum Project demand for groundwater would result in groundwater overdraft (i.e., exceed natural replenishment) is based on a comparison of Project demand against estimates of both groundwater replenishment and other withdrawals in the Chuckwalla aquifer.

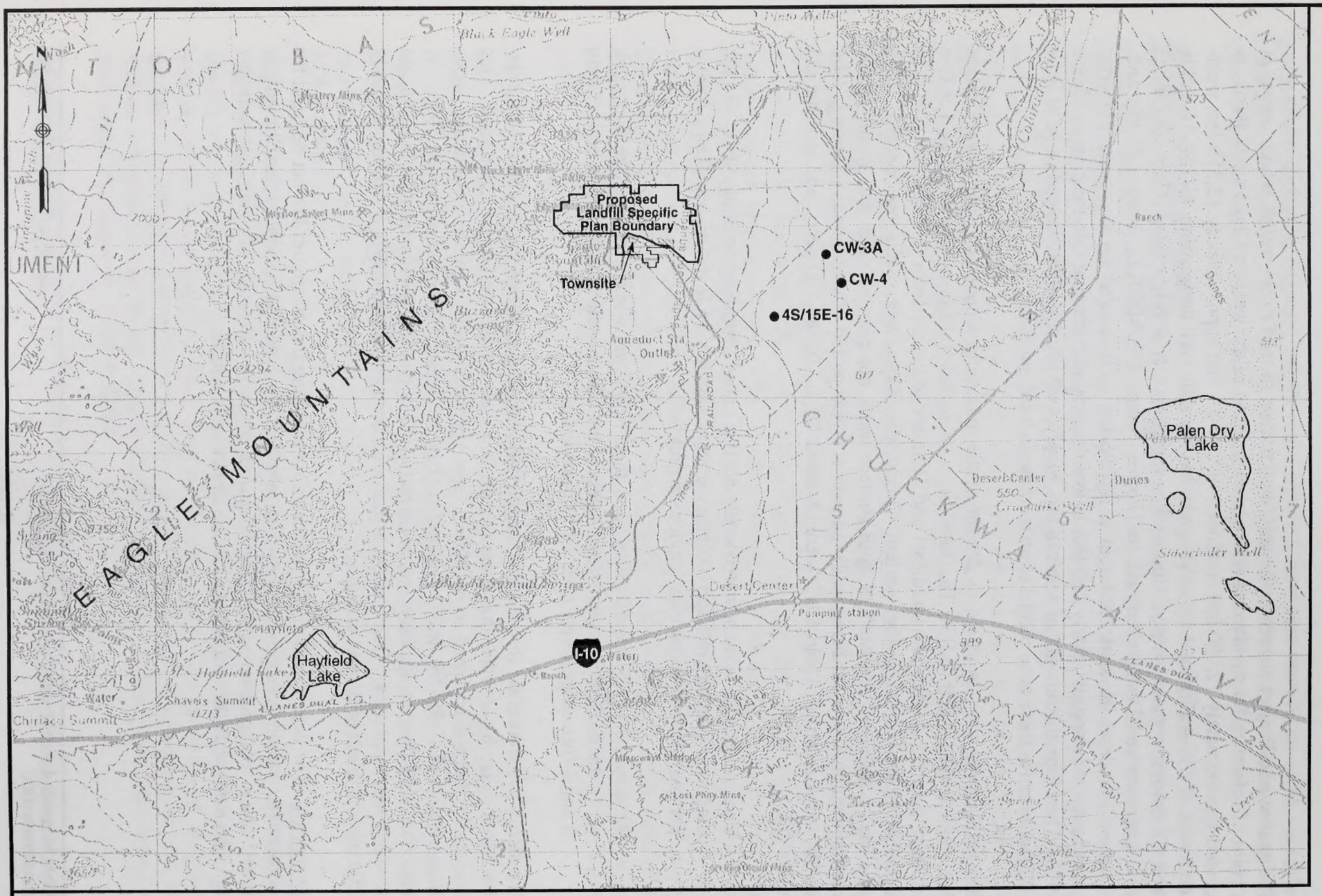


Figure 4.1-3
Location of Project Wells and Closest Non-Project Water Supply Well
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

Table 4.1-2
Results of Approximations of Groundwater Level Declines

Pumping Rates	Duration of Continuous Pumping	Groundwater Level Decline (feet)				
		CW-3A	CW-4	Observation[1]	5 Miles[2]	10 Miles[3]
CW-3A = 369 gpm CW-4 = 416 gpm	1 year	18	22	<1	<1	<1
	10 years	23	28	3	<1	<1
	100 years	38	42	14	8	3

[1]Observation well (4S/15E-16) located approximately 12,000 feet southwest of CW-3A and 12,350 feet west southwest of CW-4.
[2]Arbitrary location 5 miles south-southeast of Project site.
[3]Arbitrary location 10 miles southeast of Project site.

As mentioned in Section 3.1.4, and detailed in Appendix C-1, groundwater recharge to the Chuckwalla aquifer has been determined to be approximately 12,200 ac-ft/yr. The aquifer is therefore in overdraft when total pumping from the aquifer exceeds this value. The current (1995) amount of pumping from the aquifer is estimated to be less than 7,500 ac-ft/yr, a pattern that has prevailed since at least 1992 (when total pumping was estimated to be approximately 8,100; Correspondence to Dr. J. H. Birman/Geothermal Survey, Inc. from James C. Hanson Consulting Engineers, 1992). This conclusion that the aquifer is not currently in overdraft differs from the interpretation in the previous EIS/EIR (BLM and County of Riverside, 1992), where it was assumed that total pumping in the Chuckwalla Basin remained constant at 1986 levels (approximately 23,000 ac-ft/yr).

When the maximum Project pumping (1,243 ac-ft/yr) is added to the estimate of current total pumping (7,500 ac-ft/ yr), the total (8,766 ac-ft/ yr) is less than the estimated rate of recharge (12,200 ac-ft/yr) to the basin. Therefore, at current pumping rates, the Project will not cause an overdraft condition to occur in the Chuckwalla aquifer.

Springs. The springs in the Eagle Mountain area (identified in Section 3.1.1.1) will not be influenced by groundwater pumping for the proposed Project. These springs are all located in the Eagle Mountains at elevations that are several hundred feet above the valley floor where Project pumping will occur. Flows from these springs are determined by the amount of recharge to that portion (area) of the bedrock that feeds the springs.

The source of water for Project pumping is within the alluvium of the Chuckwalla aquifer, and, as demonstrated above, groundwater depletion in the Chuckwalla aquifer will not be significant. Without either Project pumping in the bedrock aquifer or significant groundwater depletion in the Chuckwalla aquifer there will not be effect on groundwater flow in the bedrock aquifer.

Project pumping in the Chuckwalla aquifer, therefore, will neither influence the amount of recharge to the springs nor interfere with groundwater flow within the Eagle Mountains. As a result, the proposed Project will not only not cause a cessation of spring flows (i.e., exceed the threshold significance criterion), it will not cause a reduction in these flows.

Degradation of Quality of Water Pumped as a Result of Lower Groundwater Levels. In the eastern Chuckwalla Basin, there is evidence that the quality of groundwater naturally worsens with depth (i.e., deeper sediments typically yield water with higher total dissolved solids) (Woodward-Clyde, 1988). This phenomenon could occur in the vicinity of the Project site. Groundwater quality is generally poorer in the deeper bedrock aquifer than in the overlying Chuckwalla aquifer (although the water quality of both aquifers is generally considered poor; see Section 3.1.3). If wells are deepened or otherwise produce most of their water from deeper portions of the aquifer (because of Project-induced lowering of groundwater levels), the quality of the water pumped could be poorer relative to water previously obtained from shallower portions of the aquifer.

Groundwater pumping for the proposed Project will not result in a significant lowering of groundwater levels in existing non-Project wells (as discussed above). Consequently, the quality of the water pumped by others should not be degraded in the future as a result of Project pumping.

Mitigation. Because there would be no significant effect on groundwater levels as a result of groundwater pumping for the proposed Project, no mitigation measures would be required.

Significance After Mitigation. No significant effects would occur.

Interference with Groundwater Recharge. The sources of groundwater recharge are the infiltration of precipitation or runoff and, for the Chuckwalla aquifer, groundwater inflow from other aquifers or basins (see Sections 3.1.1.2 and 3.1.2.3).

Impacts. The evaluation of the effects of the proposed Project on groundwater recharge includes the assessment of both the potential changes in infiltration and Project-induced effects on groundwater inflow to the local aquifers.

Change in Infiltration. The source of recharge from infiltration is primarily ephemeral surface-water flows and, to a lesser extent, direct precipitation. The proposed Project will inhibit infiltration, and therefore recharge, where the principal areas of infiltration are covered by the landfill, roads, buildings or other relatively impermeable features. The proposed Project, however, will also involve the construction of unlined detention basins, which will receive the surface-water runoff from these impermeable areas and facilitate infiltration.

These basins address runoff from locations within the Project site and upgradient (i.e., upstream of the landfill within the Eagle Creek watershed). Outside the Project site, on the floor of the Chuckwalla Basin, the only Project feature to consider in this regard is the

extension of Eagle Mountain Road. The road extension will cover approximately 18 acres overlying the Chuckwalla aquifer, and runoff from the road will not be directed to a detention basin. However, because there is effectively no natural recharge to the Chuckwalla aquifer through the floor of the Chuckwalla Basin (see Section 3.1.1.2; Appendix C-1), the road extension will not affect groundwater recharge.

Under the proposed Project, surface-water runoff from both on (i.e., the final cover) and off of the landfill will be directed to four new unlined detention basins in addition to two existing facilities on Eagle Creek (see Figure 4.6.1 and companion discussion in Section 4.6). These facilities will be permanent and constructed as needed during landfilling to control surface flows (i.e., temporary structures will be used during construction [GeoSyntec, 1992], and the East Pit will continue to receive runoff until at least the completion of Phase 2).

Four of the six basins will overlie the bedrock aquifer and, combined, will receive approximately 60 percent of the runoff from the landfill as well as the flows from upgradient locations within the watershed. The four facilities are (see Figure 4.6.1): (1) the two existing facilities in Eagle Creek, which will capture runoff from Phases 1 and 2 along with flows from the Eagle Creek watershed upstream of the landfill; (2) a new basin between the southern border of the landfill and the Townsite, opposite the contact between Phases 3 and 5, to collect the overflow from the Eagle Creek basins; and (3) a new basin on Bald Eagle Creek upstream of the landfill, which will also be sized to accommodate surface water drainage from northern portions of Phase 2 and Phase 3.

The remaining 40 percent of the runoff from the completed landfill final cover will be directed either to a detention basin in the northeast corner of the Project site or east directly into the Chuckwalla Valley. These flows will either evaporate or recharge the Chuckwalla aquifer.

As a result, the sources of water that are currently available for recharge will remain available for infiltration under the proposed Project; therefore, overall groundwater recharge will not be affected by the reduction in infiltration area. Recharge specifically to the local bedrock aquifer, however, is estimated to be reduced by approximately 25 ac-ft/year. The details of this assessment are presented in Appendix C-1. Briefly, the reduction in recharge is based on the following parameters: (1) the total landfill area upon completion, 2,164 acres (Section 1); (2) the average annual precipitation, 3.5 inches (Section 3.1); and (3) the percentage of precipitation that infiltrates, assumed to be 10 percent (Appendix C-1). Forty percent of the product of these parameters equals 25 ac-ft/year.

Groundwater Inflow. Groundwater inflow is only a component of recharge to the Chuckwalla aquifer (Appendix C-1). Inflow sources include subsurface flow from upgradient groundwater basins (e.g., the Pinto and Orocopia Basins), and the saturated bedrock of the surrounding mountains (e.g., the bedrock aquifer in the Eagle Mountains). The proposed Project will not affect groundwater inflow to the Chuckwalla aquifer from upgradient groundwater basins, which is approximately 6,700 ac-ft/year (Appendix C-1). Inflow from the surrounding bedrock will be reduced slightly (25 ac-ft, see above) by the

proposed Project. This water, however, will not be lost to recharge because it will be available to enter the Chuckwalla aquifer from infiltration (in the detention basins and natural drainage courses identified above) rather than inflow from the bedrock aquifer. If it conservatively assumed that this water is lost to recharge, it represents less than one quarter of 1 percent of the recharge to the Chuckwalla aquifer (25 ac-ft out of approximately 12,200 ac-ft). Based on the significance criterion, the proposed project will not, therefore, substantially interfere with groundwater recharge.

Mitigation. No mitigation measures are required.

Significance After Mitigation. The proposed Project will not substantially interfere with groundwater recharge and, therefore, the potential effects of the Project are below the level of significance.

Encouragement of Activities That Use Large Amounts of Water. Under CEQA, projects that encourage the use of large amounts of water will significantly impact the environment. In this evaluation, water use is considered large if the use results in substantial groundwater depletion (see Section 4.1.1.2).

Impacts. Because the proposed Project will not significantly deplete groundwater resources, there are no activities associated with the Project that use large amounts of water.

Mitigation. No mitigation measures would be required.

Significance After Mitigation. No significant effects would occur.

Wasteful Use of Water. Under CEQA, wasteful use of water by a project constitutes a significant environmental impact.

Impacts. The design and operation of the proposed Project has been altered to incorporate measures to use as little water as possible. This policy of the Project applicant has resulted in a 40 percent reduction in the maximum demand for water by the proposed Project from what was presented in the previous EIS/EIR (see Section 3.1.4.). In addition, various water conservation measures are proposed in the proposed Project including the use of reclaimed water for dust control. It is concluded that the proposed Project will not result in a wasteful use of water.

Mitigation. No mitigation measures would be required.

Significance After Mitigation. No significant effects would occur.

Ground-Surface Subsidence. Under certain geological conditions, groundwater withdrawals could result in subsidence of the ground surface. Specifically, subsidence can occur when extensive groundwater withdrawals are made from aquifer-aquitard systems that consist of thick sequences of unconsolidated or poorly consolidated sediments containing a large

percentage of highly compressible clays (Freeze and Cherry, 1979). Aquitards are geologic units (typically layers of fine-grained, low-permeability sediments) that inhibit the movement of groundwater, and act to confine groundwater in aquifers under pressure.

Impacts. Substantial subsidence (defined in Section 4.1.1.2) would not occur as a result of groundwater withdrawals for the proposed Project for several reasons:

- Local wells typically have their well screens above zones or layers of clay of significant thickness (based on available well logs).

- The magnitude of water level decline decreases sharply away from the immediate area of influence (approximately 1,000 feet) around each of the pumping wells, and within this area there are few structures that could become affected (i.e., damaged) due to subsidence.

- Historically, groundwater was pumped from the Chuckwalla aquifer at rates that were greater than the anticipated maximum rates for the proposed Project, and the resulting fluctuations in groundwater levels have not resulted in known occurrences of subsidence.

Mitigation. No mitigation measures would be necessary.

Significance After Mitigation. No significant effects associated with ground-surface subsidence would occur.

4.1.3.2 No Action Alternative

Impacts. This alternative would preclude the occurrence of any potential Project-related impacts to groundwater use.

Mitigation. No mitigation measures are required for this alternative.

Significance After Mitigation. No significant effects on the groundwater use would occur.

4.1.3.3 Reduced Volume of Onsite Disposal Alternative

Impacts. The potential impacts to groundwater use under this alternative would be essentially identical to those of the proposed Project. Although the annual groundwater consumption would be less than the proposed action, a reduction of waste disposed of in the landfill would not substantially alter operations and affect groundwater usage differently than the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Impacts would be reduced to below the level of significance.

4.1.3.4 Alternate Road Access Alternative

Impacts. An alternate access road would not affect groundwater use differently than the proposed Project. The potential impacts to groundwater use under this alternative would therefore be identical to those of the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Impacts would be reduced to below the level of significance.

4.1.3.5 Rail Access Only Alternative

Impacts. An alternate access road would not affect groundwater use differently than the proposed Project. The potential impacts to groundwater use under this alternative would therefore be identical to those of the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Impacts would be reduced to below the level of significance.

4.1.3.6 Landfill on Kaiser Land Only Alternative

Impacts. Under this alternative, the footprint of the landfill would be reduced to approximately 289 acres, resulting in decreased water use associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Impacts would be reduced to below the level of significance.

4.1.3.7 Landfill Development/No Townsite Development Alternative

Impacts. Under this alternative, the landfill would be developed but the Townsite renovation to accommodate landfill employees and their families will not occur. Water use associated with the landfill would remain the same as the proposed action, but water use by the Townsite would remain at existing levels to serve the community correctional facility and Kaiser employees and their families. Consequently, the overall demand for water will be less under this alternative relative to the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Impacts would be reduced to below the level of significance.

4.2 Public Health and Safety

This section evaluates aspects of the proposed Project that could pose the potential for significant adverse impacts to public health and safety. Despite the nonhazardous nature of the wastes intended for disposal at the proposed landfill site, certain potential adverse effects related to public health and safety are common to all municipal solid waste landfills. These potential adverse effects include those associated with hazardous wastes, landfill gas, fires, vectors and disease control, and worker safety. This section also discusses, where applicable, mitigation measures for public health and safety.

4.2.1 Standards of Significance

The National Environmental Policy Act (NEPA) has no formal definition of thresholds of significance for public health and safety impacts of a project. In accordance with California Environmental Quality Act (CEQA) Guidelines (Appendix G), however, a project generally would be considered to result in a significant effect on the environment if it would: "Create a potential public health hazard or involve the use, production or disposal of materials which pose a hazard to people or animal or plant populations in the area affected." Consistent with this general definition, the following significance standards have been developed for hazardous waste, landfill gas, fires, vectors, and worker safety.

- **Hazardous Waste.** For generation, storage, and disposal of hazardous waste, the potential for the Project to create a public health or environmental hazard is related to: "Hazardous wastes (which are present in the solid waste stream) generated during project-related equipment operation and maintenance, or associated with commercial operations in the Townsite; or unauthorized releases to the environment (soil or groundwater) of hazardous wastes above reportable quantities."

  The proposed Project would result in a significant impact to public health and safety if it is not designed, constructed, and operated in a manner consistent with all applicable regulations, as presented in Section 3.2 of this environmental impact statement/environmental impact report (EIS/EIR), governing the handling of hazardous and nonhazardous waste.

- **Landfill Gas.** Potential adverse impacts from the generation of landfill gas (LFG) would be significant if the potential for an accidental spill of LFG condensate or public exposure to LFG emissions or subsurface migration could pose a risk to human health and safety. The assessment of whether landfill gas poses a risk to human health and safety assumes that violation of any applicable federal and state regulation governing LFG and LFG condensate would result in a significant adverse impact to public health and safety.

- **Fires.** Any increased public exposure to fires attributable to the proposed Project, including exposure resulting from noncompliance with applicable regulations governing fire control at landfills, would be considered to constitute a significant public health and safety hazard.

- **Vectors.** In compliance with standards provided by the California Integrated Waste Management Board (CIWMB) in Title 14, CCR, Section 17707, the proposed Project would be considered to create a significant public health and safety impact if it would result in any propagation; harborage; or attraction of flies, rodents, or other vectors not in compliance with applicable regulations governing vector control at landfills.
- **Worker Safety.** The Project would be considered to result in a significant impact to public health and safety if workers would be exposed to health and safety hazards not in compliance with procedures mandated by statute, including measures required under the 1970 Occupational Safety and Health Act and the minimum standards for solid waste handling and disposal specified in Title 14, CCR, Chapter 3, Article 7.5 Disposal Site Operations, §17666 *et. seq.*
- **Public Safety.** Any risk to public health and safety attributable to the Project, including landfill construction or operation and the accidental spillage of waste, would be a significant impact.

4.2.2 Solid Waste Stream and Hazardous Wastes

4.2.2.1 San Diego County Superior Court Ruling on Previous EIR

The Court issued a Statement of Decision in 1994, which stated in part that the report of the findings of the Level I contaminant survey conducted by the Bureau of Land Management (BLM) in connection with the proposed land exchange "should have been disclosed to the public and any investigation pursuant to that report should have been done prior to the certification of the Final EIR." Because the Court was requiring additional environmental review for other reasons (see Section 1.2.1), the Court concluded that the survey report and its significance should also be considered. The Court ordered the County to analyze fully the impact of the Level I Contaminant Survey conducted by the BLM in connection with the proposed land exchange.

4.2.2.2 Proposed Action

The Eagle Mountain Landfill will be developed as a Class III nonhazardous solid waste landfill. In accordance with the requirements set forth in Title 23 of the California Code of Regulations (23 CCR Chapter 15), such a facility will accept only nonhazardous solid and inert wastes. As defined in 23 CCR, nonhazardous solid wastes consist of all putrescible and nonputrescible solid and semisolid wastes, including:

- Garbage, trash, refuse, paper, rubbish, and ashes
- Industrial, demolition, and construction wastes
- Abandoned vehicles and parts thereof
- Discarded home and industrial appliances

- Manure and animal solids
- Dewatered sewage sludge
- Other solid or semisolid waste, provided that such wastes do not contain wastes that must be managed as hazardous wastes, or wastes that contain soluble pollutants in concentrations that exceed applicable water quality objectives, or could cause degradation of waters of the state

Not all of these wastes allowed for disposal in Class III landfills will be accepted at the Eagle Mountain Landfill. Wastes that will be accepted for disposal at the proposed landfill will be limited to nonhazardous, nonrecyclable paper, green waste, plastic, food waste, metal, glass, textiles and yard waste, as well as nondecomposable inert solids such as dirt, concrete, rock, and other construction material. The Eagle Mountain Landfill will not accept bulk high-liquids content wastes (i.e., waste with a moisture content exceeding 40 percent), industrial wastes, sewage sludge, ashes, or hazardous wastes. With increased implementation of recycling attributable to AB 939, the major components of waste to be disposed of at the landfill are likely to be nonrecyclable paper (comprising 13 to 27 percent of the waste stream), miscellaneous waste (14 to 22 percent), food waste (6 to 16 percent), and plastics (5 to 10 percent).

For the landfill, hazardous waste is discussed below in the context of: (1) the potential of its presence in the solid waste stream, (2) its generation as a result of equipment operation and maintenance, and (3) its presence as a result of unauthorized releases. This discussion is followed by an assessment of hazardous waste in relation to the Townsite and to Joshua Tree National Park (JTNP).

Hazardous Wastes in the Solid Waste Stream

Items such as nail polish, paint, cleaning products, insecticides, automotive and appliance batteries, aerosol cans, and other common household goods contain hazardous constituents that are not authorized for disposal at Class III nonhazardous solid waste landfills. Federal and state regulations control hazardous substances and wastes and prevent their improper disposal. State law and regulations (Chapter 15 of Division 3 of Title 23 of the California Code of Regulations) govern the disposal of four types of wastes: (1) hazardous waste, (2) designated wastes, (3) nonhazardous solid waste, and (4) inert wastes. Because of these regulations, large quantities of hazardous substances and wastes are not typically found in the municipal solid waste stream.

Most existing programs that sample and analyze the solid waste stream are designed to identify the amount of recyclable material present or the energy content of the combustible material; they are not designed to identify the presence or amount of hazardous wastes in the refuse. A few studies, however, have been performed that address this question. Monitoring programs at Los Angeles County landfills have confirmed the presence of unauthorized materials in nonhazardous domestic and commercial refuse.

In 1979, the County Sanitation Districts of Los Angeles County initiated a program that estimated the hazardous content of municipal wastes at the Mission Canyon Sanitary Landfill. Of the 29 household/commercial loads sampled, less than 0.2 percent (by weight) was found to be hazardous. A hand-sorting program conducted by the City of Los Angeles Bureau of Sanitation indicated the percent of unauthorized materials in household refuse to be approximately 0.3 percent (by weight). These measurements include the weight of the containers in which these materials were found. Results from Los Angeles County's existing monitoring program, in effect since 1984 at the Puente Hills Landfill, show that the hazardous fraction of the total waste stream is less than 200 parts per million (ppm) (0.02 percent by volume).

The CIWMB Interim Database Project estimated 1990 waste stream composition for the Counties of Ventura, Los Angeles, Orange, San Bernardino, Riverside, Imperial, and San Diego (CIWMB, 1992). These data indicate that household hazardous waste represented a composite average of approximately 0.6 percent (by weight) of the municipal waste stream for the seven-county area proposed as the wasteshed for the proposed landfill. This percent included the combined weight of the household hazardous waste and its container and, as such, could overestimate the actual disposal quantities of household hazardous waste. In addition, it should be noted that these data were compiled prior to implementation of city and county household hazardous waste interdiction programs, as required under Assembly Bill (AB) 2707 and AB 939, which seek to eliminate from the waste stream household hazardous waste intended for disposal in Class III landfills.

The above referenced programs monitored refuse that was not prescreened, and no recycling occurred prior to the refuse being place in the waste stream. Consequently, the historic 0.2 to 0.6 percent-by-weight fraction of household hazardous waste reported in previous surveys is considered to be a conservative, "worst-case" level, which is not representative of the waste stream composition intended for disposal at the proposed landfill site.

Impacts. Although municipal solid waste streams do contain small quantities of waste technically classified as hazardous from households and from commercial, industrial, and medical facilities, operating experience at various Class III landfills has shown that the quantity of this material arriving at the landfills is very small (CIWMB, 1992). Operating experience also shows that these small quantities are effectively isolated by the much larger mass of nonhazardous solid waste.

Any untreated infectious waste that might be illegally disposed of at the landfill has the potential to cause disease if not properly intercepted, sequestered, or appropriately handled. Temporary storage of hazardous wastes separated from the solid waste stream could be susceptible to unauthorized releases as a result of mechanical failures of storage containers or accidental reaction of incompatible wastes inadvertently mixed together directly or through collision during movement.

Mitigation. The potential for public exposure to hazardous wastes in the solid waste stream at the Project site will be reduced through an offsite and onsite waste stream sorting process, as well as through proper design, construction, and operation of the landfill itself.

Waste Stream Sorting Process. To help maintain the environmental integrity of the proposed Project, only nonhazardous municipal solid waste will be allowed at the landfill. To ensure that hazardous waste will not be received, an extensive waste checking program will be implemented. As noted in Section 2 of this EIS/EIR, waste will be inspected at several points before disposal:

- Waste containers will be inspected at Rail Yard I or Rail Yard II as the containers arrive by train or by truck. Suspicious containers or containers that have a broken inspection seal will be taken to a designated waste inspection area near the landfill working face for unloading and inspection prior to disposal, or the containers could be shipped back to their point of origin without unloading. A portable or fixed instrument will be used to check containers for emission of radioactivity.

- Additional inspection of the waste will take place during the disposal process by specially trained tipper- and heavy-equipment operators. Inspection occurs as the waste is unloaded from the transport containers and as it is being spread and compacted on the landfill floor. Noncomplying waste will be transported and temporarily stored at a special area at the local waste receiving facility, which will be surrounded by a chain-link fence that will remain closed, except during operating hours. This waste will be inventoried, reported, and shipped to a proper facility for disposal or treatment.

Project Facility Design, Construction, and Operation. Construction and monitoring of the temporary hazardous waste storage area will comply with the requirements of 22 CCR for this type of facility. Hazardous waste storage areas will be located near all maintenance buildings and waste inspection areas for temporary storage of household hazardous waste. This type of waste will be stored for no more than 90 days before transport offsite to a permitted facility for treatment and/or disposal by a licensed hazardous waste transportation or disposal company in accordance with 22 CCR Section 66508.

At the proposed landfill site, a waste inspection area will separate and temporarily store nonconforming material from solid waste. This nonconforming material includes any hazardous wastes that enter the solid waste stream and are not removed before transport to the landfill. Waste originating from the Chuckwalla Valley also will be inspected for hazardous wastes at the onsite inspection station located within the container handling yards. State and federal regulations require such accumulation areas to provide for secondary containment to prevent releases to the environment.

The proposed landfill will be designed, constructed, and operated in a manner consistent with all applicable regulations governing the handling of hazardous and nonhazardous waste. The owner or operator of a landfill must comply with the following requirements as specified in 40 CFR Part 258, Subpart C—Operating Criteria, which states that an "Owner or operator must implement a program to detect and prevent the disposal of regulated hazardous wastes and polychlorinated biphenyl (PCB) wastes." The program must include at a minimum:

1) Random inspections to ensure that incoming wastes do not contain regulated hazardous wastes or PCB wastes

2) Records of any inspections

3) Training of facility personnel to recognize regulated hazardous waste and PCB wastes

4) Notification of CIWMB or Environmental Protection Agency (EPA) if a hazardous waste or PCB waste is discovered at the site

Significance After Mitigation. Although the potential volumes and concentrations of hazardous waste in the solid waste stream are low, and the likelihood of public exposure to these compounds is slight, health-protective measures are incorporated into the landfill design. An onsite hazardous waste inspection program will be implemented. Regional inspection and enforcement would also occur. The mitigation measures incorporated into the proposed Project design would reduce the potential for public health and safety impacts from hazardous wastes in the solid waste stream to below the level of significance. The liner system design for this landfill is typical of liner system design for a hazardous waste landfill and the same types of materials (i.e., high-density polyethylene geomembrane clay, sand, and gravel) are used in the construction. No additional mitigation measures beyond those associated with existing requirements and aspects of the proposed Project are necessary or warranted.

Equipment Operation and Maintenance

Impacts. General and mobile equipment maintenance has the potential to result in the generation of hazardous wastes such as waste lubricants, spent cleaning solvents, paints and coatings, and contaminated disposable parts such as filter elements. The volumes of wastes are expected to be generally proportional to the number of pieces of heavy equipment used at the landfill. For maintenance related to fixed facilities at the landfill under full operation, it is assumed that the equivalent of one 55-gallon drum of hazardous waste will be generated per month (or approximately 2 tons of hazardous waste per year at 300 pounds per drum). In terms of vehicle maintenance at the landfill, it is assumed that, with a full crew of employees, the landfill could operate as many as 50 vehicles, each generating approximately two 55-gallon drums of hazardous waste per year, or approximately 15 tons per year of hazardous waste from vehicle maintenance operations.

Mitigation. Although the potential volumes and concentrations of hazardous wastes generated through operation and maintenance of machinery and vehicles at the landfill are low, and the likelihood of public exposure to these compounds is slight, the following health protective measures are incorporated into the landfill design:

- Mine Reclamation Corporation (MRC) shall review the existing health and safety plan for the Project site. This plan shall be updated and expanded, as necessary and appropriate, to encompass pertinent requirements for hazardous materials emergency response planning, communication, and training as specified in Chapter 6.95,

Article 1, Sections 25500-25520 of the California Health and Safety Code, as well as Title 8 of the California Code of Regulations (8 CCR).

- Hazardous wastes generated through operation and maintenance of machinery and vehicles will be managed and disposed of in accordance with applicable regulations.
- Where appropriate, hazardous waste toxicities will be reduced by substituting less-toxic materials, such as aqueous-based cleaning products, for solvent-based cleaning products.
- With the exception of emergency repair work, vehicle maintenance activities will be restricted to vehicle maintenance buildings or bermed, sealed concrete maintenance pads at specified vehicle maintenance locations.
- Spill containment and cleanup kits will be located at each vehicle maintenance location to take care of spills that occur during maintenance operations.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce the potential for public health and safety impacts from hazardous wastes associated with operation and maintenance of vehicles and equipment to below the level of significance.

Unauthorized Hazardous Waste Release

Impacts. Unauthorized releases of hazardous wastes could occur where equipment failures or maintenance takes place away from the designated equipment service area. Vehicle and train fueling facilities are subject to spills, especially during peak periods of operation when traffic is heavy. Storage of fuel above the ground allows monitoring for releases, but could be a potential impact in relation to fire prevention concerns.

The truck marshaling yard will allow minor maintenance of trucks and trailers. If maintenance were to take place on unsealed surfaces, such as dirt or gravel, the potential for releases to the environment would be greater than for maintenance conducted in buildings or other areas with sealed floors. These maintenance operations conceivably could be conducted with little or no oversight by the facility owner, with the result that spills could occur and be unreported.

The California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) investigated citizen complaints regarding alleged disposal of hazardous waste, including that associated with routine vehicle operation and maintenance activities (e.g., used motor oil from heavy equipment oil changes) at the Eagle Mountain Mine (see Section 3.2.2.1). A team comprising representatives from DTSC; the complainants; local citizens; other federal, state, and local agencies; and Kaiser and MRC employees inspected and sampled suspected disposal areas. On the basis of laboratory results, "no hazardous waste constituents were detected in any of the samples with the exception of native heavy metals, which were all well below the regulatory levels for toxicity" (DTSC, 1994). In

addition, the DTSC also evaluated the fine tailings to assess their suitability as part of the proposed landfill liner system. DTSC concluded that "[n]either the analytical results nor the regulatory status of the fine tailings material would preclude it from being used as Class III landfill liner material" (DTSC, 1994a). As a result, no significant impacts due to unauthorized releases of hazardous materials is anticipated.

Mitigation. Although the potential volumes and concentrations of hazardous wastes generated through unauthorized releases at the landfill are low and the likelihood of public exposure to these compounds is slight, the following health-protective measures are incorporated into the landfill design:

- Spill prevention and containment kits will be placed at locations near equipment operating areas to minimize the impacts of accidental releases of fuels and lubricants.
- Vehicle maintenance will take place in existing or new maintenance buildings, to limit the impacts of accidental fuels and lubricant releases during maintenance.
- Double-walled fuel storage tanks and leak detection equipment will be employed to provide protection against significant releases.
- Development of a site-specific hazardous material and emergency response plan, which would include operator training in appropriate spill response techniques.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce to below the level of significance the potential for public health and safety impacts from hazardous wastes associated with unauthorized releases.

Townsite Hazardous Waste

Impacts. This Project is expected to add residents to the Townsite, which could result in increases in the number and type of the existing commercial enterprises. In addition, the Tentative Tract map for the Project indicates property zoned for commercial/manufacturing, which would allow future manufacturing operations with associated hazardous waste generation (see Sections 3.5 and 4.5, Land Use). Although there are no existing plans for specific commercial or industrial enterprises in the Townsite, the increased population of the Townsite could potentially result in one or more manufacturing or industrial enterprises locating in the area.

Renovation of the Townsite under the proposed Project will primarily involve residential housing and associated utilities upgrades to accommodate additional people. Conventional residential construction typically generates only limited, small amounts of hazardous waste (e.g., fueling of construction equipment); and releases would be highly unlikely. Fueling of vehicles would take place at existing fuel stations (i.e., not unprotected ground surfaces); and relatively few vehicles would be involved in construction. Hazardous wastes, such as paint wastes, could create a short-term waste stream that would require proper management by

construction contractors. An asbestos survey has been conducted for homes in the Townsite area. Any demolition of homes must be in accordance with an Asbestos Management Plan.

Commercial development within the Townsite will depend, in part, on market forces in response to perceived needs for particular commercial enterprises by Townsite residents. Manufacturing development within the Townsite will depend, in part, on the availability of a suitable workforce in the Townsite and proximity to potential buyers relative to other competing manufacturing locations. The development and location of commercial or manufacturing operations within the Townsite can be controlled through the Specific Plan for the Townsite (see Sections 3.5 and 4.5, Land Use).

Commercial (or community) operations that can be expected in the Townsite are reactivated schools, new grocery stores or convenience stores, an expansion of the existing community correctional facility, and potentially expanded fire and police facilities. None of these facilities is expected to be a significant generator of hazardous waste. The limited amounts of hazardous wastes generated could be managed and collected through a regularly scheduled pickup by a hazardous waste disposal contractor to these facilities (see Section 3.2.1).

Mitigation. Because no significant impacts from hazardous waste generation in the Townsite will occur, no other specific mitigation measures beyond the existing requirements and aspects of the Project design are necessary.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce the potential for public health and safety impacts from hazardous wastes associated with the Townsite to below the level of significance.

Joshua Tree National Park

Impacts. Unauthorized releases of hazardous wastes are highly unlikely to affect JTNP and, therefore, are considered to have a less than significant impact on the park. With the exception of local self-haul in the Chuckwalla Valley, the waste to be disposed of at the landfill will be inspected and screened for hazardous waste prior to arrival at the Project site. This effort will be supplemented by implementation of an onsite waste inspection program (see Section 2.1.7.2).

Although the Project will result in limited increases in local population, commerce, and services, hazardous waste generation associated with the Project is not expected to be significant because of the availability of: (1) household hazardous waste collection programs, (2) regularly scheduled pickup by a hazardous waste disposal contractor to potential commercial or manufacturing facilities, and (3) implementation of construction-related best management practices.

General- and mobile-equipment maintenance operations for the landfill will be conducted in designated locations onsite, and any hazardous wastes generated as a result of these activities will be of small volume and subject to appropriate control and handling onsite.

In addition, the proposed landfill liner and leachate collection/control system would preclude migration of potential contaminants offsite. In a worst case scenario where contaminants reach the groundwater (i.e., mitigations fail to prevent a release of hazardous liquids stored at facilities at the landfill or in the Townsite), JTNP would not be impacted because groundwater flow from the landfill is away from the park (see Section 4.1).

Mitigation. No significant impacts attributable to hazardous waste generation are anticipated for Joshua Tree National Park.

Significance After Mitigation. The potential for impacts to JTNP would not be significant.

4.2.2.3 No Action Alternative

Impacts. The No Action Alternative would preclude any potential public or worker exposures to hazardous materials in the solid waste stream, either onsite or during transport. Exposures that typically are associated with conventional municipal solid waste generation, collection, transfer, and disposal at conventional landfills, including the Desert Center Sanitary Landfill near Lake Tamarisk, would continue throughout the Project's proposed seven-county wasteshed.

Under the No Action Alternative, the Desert Center Sanitary Landfill near Lake Tamarisk and the Townsite would be expected to continue to accept unknown volumes of municipal solid waste, with a concurrent elevated potential for public exposures to hazardous wastes.

Mitigation. No mitigation measures are required for this alternative.

Significance After Mitigation. The potential for public exposure to hazardous materials in the waste stream is not significant for this alternative.

4.2.2.4 Reduced Volume of Onsite Disposal Alternative

Impacts. The approximate 20 percent reduction in daily waste disposal volumes under this alternative would be expected to result in a concurrent reduction in potential public exposures to hazardous wastes in the waste stream. A reduction of waste disposed of in the landfill would not substantially alter daily operations of the Project. Such a reduction would be unlikely to result in a major decrease in the number of employees, equipment, or vehicles needed at the landfill. The requirements for hazardous waste disposal would still exist, but at a somewhat lower overall volume. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project would result in a potential for public health and safety impacts that are below the standards of significance for this alternative.

4.2.2.5 Alternate Road Access Alternative

Impacts. This alternative would not alter the conclusions about impacts and mitigation measures associated with the proposed Project. The potential public health and safety impacts from exposure to hazardous materials in the waste stream, and measures to control them under this alternative, would be identical with those of the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the design for the proposed Project would reduce the potential for public health and safety impacts to below the level of significance for this alternative.

4.2.2.6 Rail Access Only Alternative

Impacts. The Rail Access Only Alternative would reduce the potential volume of generated hazardous wastes by an amount proportional to the number of non-Chuckwalla Valley trucks deleted from the Project. This would be expected to account for no more than a small percent of the total hazardous waste generation because these trucks would likely undergo maintenance at their home bases and would only incrementally reduce the hazardous wastes in the solid waste stream by their absence. This slight reduction of waste disposed of in the landfill would not be expected to alter substantially the daily operations of the Project. Such a reduction would be unlikely to result in a significant decrease in the number of employees, equipment, or vehicles needed at the landfill. The requirements for hazardous waste disposal would still exist, but at a slightly lower overall volume. This alternative would not alter the conclusions about impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the design for the proposed Project would reduce the potential for public health and safety impacts to below the level of significance for this alternative.

4.2.2.7 Landfill on Kaiser Land Only Alternative

Impacts. Under this alternative, the daily volume of waste disposed of at the landfill site would be reduced from 20,000 tons per day (tpd) to 10,000 tpd, with a proportional reduction of potential hazardous waste. In addition, hazardous wastes from other operations, such as maintenance, fueling, and Townsite activities, would be reduced by an amount proportional to the reduction in landfill capacity (i.e., fewer landfill employees/Townsite residents), accounting for the reduced need for equipment and vehicles for a smaller landfill. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce the potential for public health and safety impacts to below the level of significance for this alternative.

4.2.2.8 Landfill Development/No Townsite Development Alternative

Impacts. The Landfill Development/No Townsite Alternative would reduce the volume of generated hazardous wastes only slightly because of the minimal hazardous waste volumes anticipated to arise from development of the Townsite. The impact would not be eliminated, but rather relocated to communities that would house landfill employees. This slight reduction of hazardous waste generation would have essentially no effect on the daily operations of the Project. The requirements for hazardous waste disposal would still exist, but at a slightly lower overall volume. This disposal requirement would be experienced on an incremental basis in the communities in which the landfill employees reside. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into a reduced-scale Project would result in impacts essentially identical to the proposed Project, with slightly reduced hazardous waste disposal.

4.2.3 Landfill Gas and Landfill Gas Condensate

Landfill gas, consisting primarily of carbon dioxide (CO_2) and methane (CH_4), is produced by natural anaerobic decomposition of organic matter in solid waste. The remaining portion of LFG consists of nitrogen and oxygen with traces of other decomposition by-products. The trace gases contain odor-producing components consisting primarily of short-chain fatty acids and sulfur-containing compounds.

The methane component of landfill gas can be explosive when it reaches a 5 to 15 percent range of concentration in the air. As methane is produced within the landfill, internal and atmospheric pressure moves the gas along the paths of least resistance. If it is not contained, and if suitable subsurface geologic conditions exist, methane could migrate offsite and present a potential safety hazard (i.e., explosion) to surrounding land uses.

LFG generation in landfills typically occurs months after the solid waste is buried, and the rate of generation decreases with time. Low levels of LFG production continue to occur for a period of time after landfill closure. The quantity and rate of LFG production depend upon the quantity of solid waste contained within the landfill, its organic content, and the moisture content of the landfill.

As discussed in Section 2, and Section 3.4, Air Quality, an LFG management system is proposed for the Eagle Mountain Landfill, which is designed to handle the volume of landfill gas that could be generated as the municipal solid waste degrades. The rate at which the waste degrades will be contingent on the composition and the moisture content of the waste. The gas generated by this decomposition will consist primarily of methane and carbon dioxide and will be collected by a series of horizontal pipes and vertical wells constructed into the waste as filling progresses. Any LFG that is produced will flow from the waste through the wells to a series of horizontal conveyance pipes, which will continuously extract and route the gas to a thermal combustor (flare), where it will be destroyed at operating temperatures exceeding 1,400° F. The LFG flare system requires permitting and approval by the South Coast Air Quality Management District (SCAQMD). Over time, if gas flow increases to a sufficient level, LFG may be collected and used as a clean fuel source to generate electricity (see Section 3.16, Energy Consumption and Generation).

4.2.3.1 Proposed Action

If not controlled, potential impacts to public health and safety could result from the explosive or airborne toxic/pathogen hazards associated with migration of LFG beyond the Project boundaries. Potential impacts related to the generation and handling of LFG condensate include pollution of groundwater or surface water and potential hazards to site personnel due to accidental spills. Potential impacts as a result of pollution of groundwater or inadequate surface water drainage are discussed in Sections 4.1 and 4.6, respectively. Potential impacts to the Townsite are discussed in conjunction with impacts to the landfill. Potential impacts to JTNP are also presented.

Impacts. The potential impacts associated with the generation of landfill gas and landfill gas condensate are described below.

Landfill Gas. The estimated rate, volume, and composition of refuse landfilled, as well as LFG generated, during the anticipated 100-year lifetime of the proposed Project assumes the following:

- A unit refuse generation rate of 0.033 cubic foot of LFG per pound of in-place refuse per year over a 30-year period (Hamm and Stinson, 1990)
- A conservative maximum daily generation rate of 66 million cubic feet per day of landfill gas is assumed to occur, which is roughly 50 percent more than Hamm's estimate
- An approximate 1-year lag time between refuse placement and the onset of substantial anaerobic decomposition/LFG generation
- The landfill site will reach the maximum refuse input level of 20,000 tons per day within 25 years

- Waste composition and moisture content remaining unchanged and unaffected by recycling or other waste reduction efforts

The landfill is planned to begin operation with an average daily volume of 3,000 to 4,000 tpd of waste. Over the first 10 to 14 years, this daily volume is expected to reach 12,000 tpd. A peak waste flow of 20,000 tpd is not expected to be reached until 25 years into the operation. During the first few years of operation, limited amounts of LFG would be generated. By operational year 45 (i.e., mid-Phase 3), the daily LFG generation rate is expected to have reached a maximum of approximately 66 million cubic feet per day (See Section 4.4, Air Quality). As noted in the previous EIS/EIR, estimates of LFG production beyond a 20- to 30-year time frame are speculative. Within the anticipated lifetime of the proposed Project, technological changes could arise that would directly affect the methods, types, and volumes of waste generated, collected, recycled, and disposed of. Such changes could also affect the amount of LFG generated.

Uncontrolled LFG migration through cracks and fissures in native bedrock, soils, fill slopes, or landfill cover material could result in explosion hazards, primarily due to methane, which could become trapped in confined spaces such as basements, utility vaults, and ducts. Methane can also accumulate in buildings above the ground surface in enclosed areas. Fugitive methane trapped in such a manner and exposed to an ignition source such as an open flame or spark is explosive at concentrations between 5 and 15 percent by volume in air. Within the landfill mass itself, methane does not pose an explosion hazard because of insufficient oxygen to support combustion.

There also is a potential health hazard posed by uncontrolled subsurface migration of LFG, which becomes trapped in enclosed structures, due to volatile organic compounds (VOCs) contained within LFG. Data regarding the composition of LFG, anticipated concentrations, and their effects are presented in Section 4.4, Air Quality. In general terms, with the implementation of effective LFG migration controls and considering natural dilution effects, the potential for subsurface migration of unhealthful concentrations of VOCs into indoor environments is considered to be remote. The acute toxicity effects of these compounds are not a concern unless humans are exposed to undiluted LFG, in which case asphyxiation could occur. An emergency response plan that addresses monitoring practices and establishes response procedures to ensure that protection of public health and safety would be prepared.

LFG Condensate. The quantity of condensate generated during the LFG extraction process is a function of LFG and ambient temperatures, flow rates, recovery system design, and operating parameters. A range of 240 to 670 gallons of condensate generated per million cubic feet (at standard temperature and pressure) of LFG recovered has been projected for the proposed landfill (ROWD, 1992). Assuming a maximum daily LFG generation rate of 66 million cubic feet per day at and around operational year 50, between 15,840 and 44,220 gallons of condensate could be generated on a daily basis.

As required by the appropriate permitting agencies, the area over which refuse will be placed will be lined with a composite liner system, comprising a low-permeability soil component overlain by a high density polyethylene synthetic liner. This system will cover the entire

bottom of the landfill. The natural materials needed for construction and operation of the landfill are available at the proposed Project site. All liner materials will be placed on excavated bedrock or prepared soil fill. The proposed liner system would effectively impede LFG migration.

The proposed Project's LFG management system is designed to handle the large volume of landfill gas that could be generated as the municipal solid waste degrades. This rate of degradation will depend largely upon the composition and the moisture content of the waste. The gas generated by this decomposition consists primarily of methane and carbon dioxide and will be collected by a series of horizontal pipes and vertical wells constructed into the waste. Any gas that might be produced will flow from the waste through the wells to a series of horizontal conveyance pipes that will route the gas to a thermal combustor (flare) that must be permitted and approved by the SCAQMD.

The percent of gas that would be collected is a function of landfill geometry, permeability of the landfill cover, and the design and operating efficiency of the system. LFG recovery rates are not readily measurable but it is likely to be over 90 percent (see Section 4.4). As noted in Section 3.4, Air Quality, the new composite liner and LFG management system are designed to capture 100 percent of the criteria pollutants entrained in the LFG. For the purposes of analysis in this EIS/EIR, it is conservatively assumed that the LFG management system will result in a gas recovery factor of 90 percent.

Permanent subsurface LFG monitoring wells or detectors/alarms will be placed near structures in the immediate vicinity of the East Pit, including those proposed for maintenance and container handling offices. Structures at the Townsite are unlikely to be affected by LFG migration because of their distance from the refuse mass and implementation of the proposed control methods. To provide assurance that there will be no potential problem, routine subsurface monitoring is recommended for this area. Due to the number of current and planned structures at the Townsite, it would be impractical to install and test monitoring wells at each building. As discussed in Section 3.1, Groundwater Quality and Use, a network of monitoring wells to be placed in soils along the northern Townsite perimeter is proposed.

If necessary and appropriate, subfloor LFG protection measures could be incorporated into the design and construction of all permanent structures proposed as part of the landfill. These could include installation of any one or a combination of the following:

- An impermeable membrane barrier below the foundation slab
- Active or passive subfloor ventilation provisions
- Special explosion-proof seals for all utility conduits entering structures from below grade
- Permanent monitoring probes installed in the subfloor environment to verify system effectiveness

LFG condensate is a potentially hazardous material and is subject to special provisions for collection, handling, and disposal. The condensate will be collected in sumps at the low points of the LFG system, pumped into steel tanks, and separated in the LFG treatment system. LFG tanks will be bermed to prevent spillage from reaching the environment. LFG condensate will be treated to separate the aqueous phase from the organic phase. The organic phase will be stored onsite as a hazardous waste for periodic removal to a licensed disposal facility. The water fraction will be used for dust control on unpaved roads or will be disposed of at the Kaiser sewage treatment facility in the southeast portion of the Townsite.

Joshua Tree National Park. Unauthorized releases of LFG and LFG condensate are unlikely to affect JTNP. The potential for offsite migration of LFG from the proposed Project to JTNP is precluded by the LFG perimeter monitoring, collection, and management system. In the event that the LFG monitoring system were to detect elevated LFG levels near the proposed boundaries of the landfill, the collection system design has the capability of selectively operating at a higher vacuum in certain areas to increase LFG "capture" rates. Furthermore, additional gas recovery wells could be installed and linked to the LFG management system, if necessary. Air impacts associated with LFG flares will be controlled and minimized through adherence to proper SCAQMD permit requirements. (See Section 4.4, Air Quality.) The composite liner system and LFG condensate collection system of the proposed landfill also minimize the potential for offsite migration of LFG condensate.

Mitigation. The proposed Project design contains inherent mitigation measures that will minimize potential public health and safety impacts that could arise from migration of LFG and LFG condensate. These measures include the landfill composite liner system, LFG management system, and LFG condensate collection system designed to capture LFG and impede LFG migration. No additional mitigation measures are necessary or warranted.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project would reduce the potential for public health and safety impacts from LFG and LFG condensate to below the level of significance.

4.2.3.2 No Action Alternative

Impacts. The No Action Alternative would preclude any potential public or worker exposures to LFG or LFG condensate.

Mitigation. No mitigation measures are required for this alternative.

Significance After Mitigation. The potential for public exposure to LFG or LFG condensate from the proposed Project is not significant.

4.2.3.3 Reduced Volume of Onsite Disposal Alternative

Impacts. The potential impacts for LFG and LFG condensate and the measures to control them under this alternative would be identical with those of the proposed action. Although the daily rate of waste disposal would be somewhat lower, the overall capacity of the Project

would be unaffected. Numerical estimates of potential public health effects, developed under the previous EIS/EIR (BLM and County of Riverside, 1992), would apply under this alternative. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce the potential for public health and safety impacts to below the level of significance.

4.2.3.4 Alternate Road Access Alternative

Impacts. The potential impacts of LFG and LFG condensate and measures to control them under this alternative would be identical with those of the proposed Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project would reduce the potential for public health and safety impacts to below the level of significance.

4.2.3.5 Rail Access Only Alternative

Impacts. The potential impacts and mitigation measures for LFG and LFG condensate under this alternative would be identical with those of the proposed Project. Numerical estimates of potential public health effects, developed under the previous EIS/EIR, would apply under this alternative. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce the potential for public health and safety impacts to below the level of significance.

4.2.3.6 Landfill on Kaiser Land Only Alternative

Impacts. The potential public health impacts resulting from exposures to LFG and LFG condensate under this alternative would be lower than those of the proposed Project because the overall capacity of the Project would be substantially lower. The measures to control LFG and LFG condensate under this alternative would be identical to those of the proposed

Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project would reduce the potential for public health and safety impacts to below the level of significance.

4.2.3.7 Landfill Development/No Townsite Development Alternative

Impacts. Under this alternative, the landfill would be developed but no renovation of the Townsite beyond existing, approved uses would be made to accommodate landfill employees and their families. The potential public health impacts resulting from exposures to LFG and LFG condensate under this alternative would be lower than those of the proposed Project because the population potentially exposed to LFG and LFG condensate releases would be lower without development of the Townsite. The measures to control LFG and LFG condensate under this alternative would be identical to those of the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project would reduce the potential for public health and safety impacts to below the level of significance.

4.2.4 Fires

Fires could be caused at the proposed Project site when LFG, combustible refuse, vegetation, or litter along the Eagle Mountain Railroad, access road, or within the landfill become ignited by any of the following sources:

- Tipping of hot or smoldering loads (containing hot embers such as charcoal briquettes or fire ashes)
- Sparks from vehicles or machinery, hot exhausts, mufflers, or brakes
- Lighted cigarettes or matches thrown from vehicles

Onsite storage of petroleum products in vehicle maintenance areas for use by operations personnel represents another potential source of fire. In addition, most solid waste landfills have the potential of subsurface combustion of buried refuse. Such fires can be triggered by burial of "hot loads" with other refuse material, or uncontrolled or improper operation of the LFG control system. Subsurface fires can result in accelerated or potentially sudden local settlement in the vicinity of a fire, and venting of smoke or combustion by-products through the

landfill cover. Also, fires started in other areas of the site can spread and be a threat to landfill employees and nearby residents.

4.2.4.1 Proposed Action

Impacts. The health and safety of landfill employees and nearby residents could be affected by subsurface or surface fires on the proposed Project site; any fires that are generated have the potential to migrate offsite. The primary hazards of a fire onsite are the potential for burn injuries and smoke emanating from the site. As a nuisance, smoke can cause eye and throat irritation, create unpleasant odors, and affect the aesthetics of the location. Wildlife can also be potentially affected.

Subsurface Fires. Subsurface landfill fires can occur if combustible materials within the landfill mass are heated to a critical temperature, either through biological decomposition or chemical oxidation. The ignition characteristics and subsequent propagation characteristics of subsurface landfill fires will depend upon factors such as waste composition, moisture content, oxygen availability, and ambient pressure. A continuous source of oxygen would be necessary for the decomposition/oxidation process; oxidation of the refuse materials can generate heat to the point of combustion. As temperatures within the landfill increase, pyrolytic reactions could also occur. Subsurface fires could be triggered by one of the following mechanisms:

- Burial of "hot loads" with other refuse materials
- Improper operation of or damage to the LFG recovery or migration control systems

A subsurface fire is unlikely to result in open flames within the landfill. Subsurface fires, however, could result in accelerated local settlement in the vicinity of the fire, as well as venting of smoke or combustion by-products through the landfill. These by-products could include particulates, unburned hydrocarbons, carbon monoxide, and various VOCs, depending on the type of buried refuse being burned in the fire. Subsurface fires are unlikely to damage the liner system for the following reasons:

- There is a barrier consisting of 3 to 10 feet of gravel over the liner material
- The lowest levels of the landfill will likely have the highest moisture content
- The oxygen concentration within the waste mass is likely to be higher near the surface

Surface Fires. Surface fires at landfills typically are small and of short duration; excavation areas on the Project site would serve as firebreaks in the event of a fire. Surface fires normally would be limited to the working face and tipping area, except in those cases where a vehicle catches fire or burning refuse falls from a vehicle. At the working face, the refuse subject to burning would be limited to that material deposited since the previous application of daily cover.

Landfill surface fires are expected to be small and of short duration because of the limited acreage of the active working face (i.e., fewer than 2 acres) and the continuous presence of compacting equipment. Surface or near-surface fires are extinguished by application of

compacted soil over the area to cut off the source of oxygen. The likely major potential health and safety impact would be to landfill workers responsible for extinguishing the fires. Burning refuse also has the potential to release toxic emissions, depending upon the type of refuse combusted. Because waste will be sorted prior to transport to the Project site, and because of the rapid dilution of smoke in the atmosphere, it is unlikely that small, short-duration surface fires at the landfill site would pose significant health hazards to nearby residents at the Townsite or to wildlife.

Right-of-Way Fires. Sparks from the brakes of trains traveling through the arid desert climate could result in fires along the right-of-way. Portions of the Southern Pacific main line and the Eagle Mountain Railroad line between Ferrum Junction and the Project site are susceptible to this impact. Because portions of the rail right-of-way are not easily accessible except by four-wheel-drive vehicles, the emergency response capacity of County fire fighting services could be limited in the event of a right-of-way fire. Southern Pacific Transportation Company (SPTC) currently implements a vegetation/weed abatement policy to spray a federally approved herbicide on each side of its right-of-way on an annual basis. At present, there is no herbicide spraying permitted on the BLM portion of the rail right-of-way.

A vegetation/weed abatement policy planned for the Eagle Mountain Railroad from Ferrum Junction to the Project site will be used to thin vegetation selectively. A ballast regulator rather than a herbicide will be used. Potential impacts to biota along the right-of-way are discussed in Section 4.7, Biological Resources.

Fires in Refuse Loads. Fires in refuse loads are possible through spontaneous ignition if correct conditions occur or from hot or smoldering materials, such as charcoal, that are discarded. Although this type of fire has the potential to occur in any refuse, the likelihood of refuse load fires associated with the proposed Project is low. All refuse accepted at the proposed landfill site from outside the Chuckwalla Valley would have been screened at materials recovery facilities/transfer stations (MRFs/TSs) prior to shipment, and burning or smoking material would have been removed or extinguished. In addition, during compaction of waste prior to loading for transport, voids or air spaces capable of supplying oxygen to support combustion would be substantially reduced. Consequently, the potential hazard associated with fires originating within waste containers does not constitute a significant impact. The potential for load fires, however, would remain for that small proportion of waste delivered to the Project site from the Chuckwalla Valley via conventional refuse hauler trucks.

Joshua Tree National Park. The potential for Project-related fires to affect JTNP adversely does not pose a significant hazard. Proper operation and maintenance of the LFG management system will preclude the occurrence of subsurface fires. Surface fires would be controlled via conventional fire response/suppression techniques and procedures by onsite emergency response personnel, supplemented by personnel from County of Riverside Fire Station 80.

Mitigation. Several features inherent to the design of the proposed Project will function to mitigate and control the potential for fire hazard.

Subsurface Fires. The same landfill internal low-oxygen environment, which is conducive to the anaerobic production of LFG, also minimizes the potential for subsurface fires. The primary mechanism to preclude the occurrence of subsurface fires is proper operation and maintenance of the LFG monitoring, collection, and management system, which, in combination with the liner system, prevents or minimizes the potential for air infiltration into the buried refuse mass. Subsurface fires at landfills with liner systems occur infrequently. Standard procedures for operation and maintenance of the LFG management system will be developed and implemented as part of the permitting process. Such guidelines would include regular subsurface and visual monitoring that could indicate elevated temperature or carbon monoxide levels that could signal the onset of a fire. Results of this monitoring would be reported to the County of Riverside Department of Environmental Health.

A fire prevention plan and an emergency response plan, which expands upon the fire prevention provisions of the existing Eagle Mountain Project Health and Safety Plan (Morrison Knudsen, 1993), will be developed in coordination with the Riverside County Fire Department, and implemented as an integral component of the proposed Project. This prevention and emergency response plan will detail specific and appropriate actions to be taken in the event of a subsurface fire including isolating any hot loads before refuse is landfilled.

Near-surface fires could be excavated and extinguished, or the landfill areas affected by the near-surface fire covered with compacted soil to cut off the oxygen supply. Deeper subsurface fires potentially could be controlled by reducing the inflow of oxygen by closing LFG extraction wells or trenches and sealing breaches (i.e., cracks, fissures) in cover materials. Deep fires could be extinguished by injecting carbon dioxide through borings to cool the material and displace oxygen.

Surface Fires. Surface fires would be controlled via conventional fire response/suppression techniques and procedures. Onsite emergency response personnel, specifically trained in conventional fire response/suppression techniques and procedures, would have ready access to large watering trucks and earth-moving equipment for fire control. County of Riverside Fire Station 80 operates from a location adjacent to the correctional facility in the western portion of the Townsite, which would allow for a rapid response time.

Rights-of-Way Fires. The potential for Project-related fires occurring within the railroad or road rights-of-way does not appear to pose a significant hazard. To reduce the potential further, the following mitigation measures are proposed:

- The operations plan for the proposed Project shall include regular inspection of the Eagle Mountain Railroad and selective abatement/removal of vegetation or material within the right-of-way that could pose an increased fire hazard.
- The equipment and staff maintained onsite for operation and maintenance shall also be available and trained to respond to potential right-of-way fires.

Fires in Refuse Loads. The potential for refuse-load fires to occur at the proposed Project site is limited. The emergency response plan, staff, and equipment maintained onsite would be adequate to respond to such incidents in conjunction with local fire districts. A fire

prevention plan and an emergency response plan, which expands upon the fire prevention provisions of the existing Eagle Mountain Project Health and Safety Plan (Morrison Knudsen, 1993), will be developed in coordination with the Riverside County Fire Department, and implemented as an integral component of the proposed Project. This prevention and emergency response plan will detail specific and appropriate actions for preventing fires as well as actions to be taken in the event of a refuse load fire, including isolating any hot loads before refuse is landfilled.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project would reduce the potential for public health and safety impacts due to fires to below the level of significance.

4.2.4.2 No Action Alternative

Impacts. The No Action Alternative would preclude the occurrence of any potential public health and safety impacts associated with increased fire hazards.

Mitigation. No mitigation measures are required for this alternative.

Significance After Mitigation. The potential for public health and safety impact due to increased fire hazard potential is not significant for this alternative.

4.2.4.3 Reduced Volume of Onsite Disposal Alternative

Impacts. The potential impacts under this alternative would be identical with those of the proposed Project. A change in landfill volume/configuration would not alter daily operations of the Project. Fire control and suppression measures under this alternative would be identical to those of the proposed Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project would reduce the potential for public health and safety impacts to below the threshold of significance for this alternative.

4.2.4.4 Alternate Road Access Alternative

Impacts. The potential impacts under this alternative would be identical with those of the proposed Project. A change in landfill access would not alter daily operations of the Project. Fire control and suppression measures under this alternative would be identical to those of the proposed Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project would reduce the potential for public health and safety impacts to below the level of significance for this alternative.

4.2.4.5 Rail Access Only Alternative

Impacts. The potential public health and safety impacts from fires under this alternative would be identical with those of the proposed Project. Fire prevention and suppression measures under this alternative would be identical to those of the proposed Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project would reduce the potential for public health and safety impacts to below the level of significance for this alternative.

4.2.4.6 Landfill on Kaiser Land Only Alternative

Impacts. The potential impacts under this alternative would be identical with those of the proposed Project. A change in landfill volume/configuration would not alter daily operations of the Project. Fire control and suppression measures under this alternative would be identical to those of the proposed Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project would reduce the potential for public health and safety impacts to below the level of significance for this alternative.

4.2.4.7 Landfill Development/No Townsite Development Alternative

Impacts. The potential impacts under this alternative would be identical with those of the proposed Project. Elimination of further Townsite development would have essentially no effect on the daily operations of the landfill. The potential public health and safety impacts resulting from landfill fires under this alternative would be lower than those of the proposed Project because the population potentially exposed to such hazards would be substantially lower without development of the Townsite. Fire control and suppression measures under this alternative would be identical to those of the proposed Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project would reduce the potential for public health and safety impacts to below the level of significance for this alternative.

4.2.5 Vector Control

4.2.5.1 Proposed Action

Impacts. Because the proposed Project involves the handling and disposal of solid waste, there is a potential for public health and safety impacts related to the presence of vectors (i.e., animals, birds, and insects), if proper operating and control procedures are not implemented and enforced. The primary concern is the potential for the proposed Project to serve as a breeding ground for disease-carrying organisms or other animals considered to be a nuisance in populated areas (i.e., the Townsite and other desert communities) and the adjacent JTNP.

Native and non-native rodent species are considered to be potential vectors that could be associated with solid waste facilities. An increased number of birds in the area of the landfill could result in potential impacts related to public health. Active feeder bird species, if not controlled, could take waste materials from the landfill site and fly to offsite areas to eat, rest, and preen. In nearby residential areas, bird droppings and any deposited refuse material could cause a significant adverse public health impact if not controlled. Flies could present a potential health impact if allowed to use exposed decaying waste as a breeding area. Uncontrolled or improperly controlled drainage areas at the landfill and rail facility could serve as habitat for mosquitoes, which could flourish and represent a significant adverse health and nuisance impact.

The primary mechanism for minimizing potential vector access to the landfill refuse is by placing a daily cover material over the refuse, as required under state regulations. At the end of each work day, all exposed waste will be covered with a minimum 6-inch layer of compacted soil. Intermediate cover layers of soil compacted to a minimum thickness of 12 inches will be applied to areas that are inactive more than 180 days. This cover would minimize the availability of and access to food in the refuse during evening hours, thereby reducing the potential for rodent or other animal vector population increases (see Section 4.7). During the day, the intensity of active landfilling operations, particularly heavy-equipment refuse spreading and compacting activities, would serve to interfere with potential feeding. During the work day, all waste will be covered with new waste, daily cover, or interim waste within 60 minutes of depositing waste in the active working area. In addition to the daily cover material, birds would be controlled by a number of techniques, including suspended lines, fencing, noise makers, or other barriers to interfere with bird activity.

Joshua Tree National Park. The potential for Project-related vectors to adversely affect JTNP does not pose a significant hazard. Previous investigations at Southern California landfills, conducted to evaluate the potential for landfills to function as fly breeding grounds,

have indicated no significant breeding or larvae emergence. Throughout each day, as the waste is compacted, daily cover will be spread on the waste at a rate to control blowing litter, rainfall infiltration, and potential vectors.

Mitigation. The application of daily cover material as part of the Project design is the primary measure to control vector populations at landfills and to decrease potential windblown debris that could result in impacts to public health and safety. Additional measures such as installing appropriate barriers have been incorporated in the Project design to control local bird populations.

Studies conducted at County Sanitation Districts of Los Angeles County landfill sites evaluated the incidence of rodent species and did not report finding rats on, or adjacent to, active landfill areas (Adest, 1979a). Additional data exist that indicate that rats, typically, do not survive in Southern California landfill habitats because they perish during normal daily disposal and compaction operations (Adest, 1979b).

Effective control of mosquitoes will be achieved through proper grading of interim fill surfaces and final fill slopes, as well as eliminating puddles and wet areas at the landfill. The proposed rail loading and ancillary facilities would be graded to prevent ponding of water. All gutters and drains would be designed to eliminate the ponding of water and possible habitat for mosquitoes.

Previous investigations at Southern California landfills, conducted to evaluate the potential for landfills to function as fly breeding grounds, have found no significant breeding or larvae emergence (Kutcher, 1979a and 1979b). Fly nuisances and propagation at landfills typically are controlled through daily compaction and covering of waste. Fly nuisances and propagation at the rail loading facility would be controlled by maintaining the tipping operations in an enclosed facility, timely processing of waste, and ensuring that all incoming waste loads are covered or containerized. Any material stored outside the facility awaiting transfer would be stored in a manner that would not attract flies.

As each subphase of the landfill reaches final grade, closure will begin. The closure system, also known as the final cover or cap, will be constructed over the waste, and is designed to serve several purposes, one of which is to control potential vectors.

Measures to control litter include:

- The perimeters of all landfill and wastehandling areas will be fenced and regularly patrolled for litter control.
- Incoming refuse (except for waste received at the local waste receiving facility) will be kept in closed containers until transported to the working face of the landfill. Upon deposit, the refuse will be compacted and covered on a daily basis with a minimum 6-inch layer of soil.

- Landfill personnel will be assigned for full-time litter and debris cleanup onsite as well as in the area between the landfill and JTNP during all daylight hours.

- A storm watch and early warning program will be implemented to alert landfill personnel to cover uncovered materials prior to a windstorm.

- A response plan to provide complete cleanup of accidental spills will be developed, including sufficient equipment and personnel to conduct a cleanup.

- Litter control personnel will be designated for direct contact and timely retrieval of stray litter when JTNP staff observe or receive reports of wind-borne debris.

- Litter control measures will be jointly evaluated by MRC, BLM, the County of Riverside, and National Park Service (NPS) after the first 6 months of landfill operation. If measures are not deemed adequate by the parties, the parties will identify additional measures that might feasibly be taken.

- MRC will work with NPS to ascertain the feasibility of conducting modeling or a simulated debris release test to assess the potential occurrence of windblown trash being released and reaching JTNP. If the modeling or tests indicates such potential, MRC will work with NPS to identify additional control measures that might prevent such occurrences. If the modeling or testing procedure is deemed feasible, MRC will conduct such modeling or testing prior to commencement of landfill operations.

- If it is determined at any time that windblown litter from the landfill is having an adverse affect on JTNP, NPS, BLM, the County, and the Department of Environmental Health, will be consulted to assess appropriate remedial action.

The first two mitigation measures are typical at most operating landfills and have been proven effective if implemented on a continuous basis.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce the potential for public health and safety impacts arising from vectors to below the level of significance.

4.2.5.2 No Action Alternative

Impacts. The No Action Alternative would preclude the occurrence of any potential public health and safety impacts associated with increased vector hazards attributable to the proposed Project. The existing Desert Center Landfill would continue to operate.

Mitigation. No mitigation measures are required.

Significance After Mitigation. The potential for public health and safety impacts due to increased vector hazard potential is not significant.

4.2.5.3 Reduced Volume of Onsite Disposal Alternative

Impacts. The potential impacts under this alternative would be identical with those of the proposed Project. A change in landfill volume/configuration would not alter daily operations of the Project. Vector control measures under this alternative would also be identical to those of the proposed Project. This alternative would not alter the conclusions about impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into a reduced-scale alternative would reduce the potential for public health and safety impacts due to increased vector hazard potential to below the level of significance for this alternative.

4.2.5.4 Alternate Road Access Alternative

Impacts. The potential impacts and control measures under this alternative would be identical with those of the proposed Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project would reduce the potential for public health and safety impacts due to increased vector hazard potential to below the level of significance.

4.2.5.5 Rail Access Only Alternative

Impacts. The potential public health and safety impacts from vector hazards and control measures under this alternative would be identical with those of the proposed Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project would reduce the potential for public health and safety impacts due to increased vector hazard potential to below the level of significance.

4.2.5.6 Landfill on Kaiser Land Only Alternative

Impacts. The potential impacts and control measures under this alternative would be identical with those of the proposed Project. A change in landfill volume/configuration

would not alter daily operations of the Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce the potential for public health and safety impacts due to increased vector hazard potential to below the level of significance.

4.2.5.7 Landfill Development/No Townsite Development Alternative

Impacts. The potential impacts under this alternative would be identical with those of the proposed Project. Eliminating repopulation of the Townsite would have essentially no effect on the daily operations of the landfill. The potential public health and safety impacts resulting from landfill-related vectors under this alternative would be lower than those of the proposed Project, because the local population potentially exposed to such hazards would be substantially lower without repopulation of the Townsite. Vector control measures under this alternative would be identical to those of the proposed Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce the potential for public health and safety impacts due to increased vector hazard potential to below the level of significance.

4.2.6 Worker Safety

4.2.6.1 Proposed Action

Impacts. Safety impacts at the proposed Project site could arise from the operation of heavy equipment and collection trucks and from exposure to objects and materials contained in the waste. Bodily injury from vehicles, dust inhalation, and elevated noise levels are also potential impacts. Mechanics who service or clean equipment could come in contact with waste attached to the tracks on heavy equipment. Potential exposures to prohibited hazardous wastes could arise during routine operations. Potential types of impacts from waste contact are infection by microorganisms present in putrescent waste or physical injury from materials in the waste, such as glass or nails.

Mitigation. Under state law (14 CCR, Division 7, Sections 17472, 17497, 17670, and 17672), site operators are required to be trained in site operation and maintenance, with emphasis on safety, health, environmental controls, and emergency procedures. In addition, site operators must ensure the safety of employees at the waste disposal facilities.

Training will be provided to landfill and rail loading facility employees. Training would include: site safety; first aid; accident prevention; and hazardous waste recognition, including emergency response measures related to hazardous waste exposure. The site operator will develop and implement a comprehensive Injury and Illness Prevention Program, the intent of which is to ensure employee and user safety at the facility.

Appropriate and applicable personal protection and safety equipment, such as dust masks, ear plugs, goggles, gloves, foot protection, orange safety vests, and other applicable personal protection equipment will be provided to landfill and rail facility employers, as needed. Accessible first aid supplies, emergency eye wash stations, and showers will also be provided. Communication equipment will also be provided between operations areas, administration facilities, and any necessary emergency responders.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project would reduce the potential for worker health and safety impacts to below the level of significance.

4.2.7 Public Safety

4.2.7.1 Proposed Action

Impacts. The Project would not be expected to increase the frequency of accidents involving solid waste transport, when considered in terms of accidents per ton-mile of transport. The emphasis on rail transport would tend to decrease the overall potential for accidents when compared with conventional truck transport of the same amount of solid waste because of the control and maintenance of rights-of-way in which trains operate. The greater distances to the Project site, however, would also tend to increase accident potential.

The major adverse impact of spilled refuse would be aesthetic. Although there could be sharp objects, broken glass, very small amounts of hazardous substances, and other hazards associated with accidental spills of refuse, these would be confined to a relatively small area. The appearance of spilled refuse is unsightly and odors from the refuse could be noticeable, but the material itself presents only a minimal hazard to people (i.e., much less of a hazard than spilled gasoline, flammable or toxic gases, or other chemicals, all of which are commonly transported by trucks and trains). Screening for hazardous wastes at MRFs or TSs would reduce the potential exposure to small quantities of hazardous wastes in the municipal refuse.

Solid waste materials would be transported to the landfill site via rail in closed intermodal transport containers. This procedure would present a health hazard from an accident only if the containers broke open and spillage occurred. The hazard would exist until the spilled material was removed. If an accident were to occur along either the Southern Pacific or the Eagle Mountain Railroad, the clean-up time would delay the passage of subsequent trains and potentially interrupt the transport of solid waste. The same type of delay would occur with a nonrailroad incident, such as an earthquake or flood that washes out a portion of the track.

Hazardous wastes from the landfill operation could include paints, fuel oil, and solvents from the maintenance activities; the organic phases from leachate or landfill gas condensate; and small quantities of hazardous materials recovered from the onsite waste inspection facility. These wastes will be periodically removed from the site for delivery to a licensed hazardous waste facility. Transportation of these wastes will be by licensed hazardous waste carriers under manifest as required by state law. Wastes will be segregated and containerized as required by regulations.

Emergency response plans to address major accidents on roadways and rail lines are already in place at the local government level, as part of federal and statewide programs. As a regular carrier of hazardous materials (not including the municipal waste transport proposed by the Project), SPTC is required by state law to have contingency plans in place to respond to spills or accidents. Materials commonly transported by rail along the Southern Pacific line include a variety of petroleum products and flammable liquids, chlorine gas, and other explosive or corrosive substances. Emergency response plans for accidents involving such materials typically assign an emergency response coordinator; the maintenance of equipment to contain and clean up any spilled material; procedures and information for notifying local fire departments, health departments, and other officials involved with public safety; retention of outside contractors to clean up certain types of releases; and other measures. This plan would be implemented by the Southern Pacific Transportation Company, its customers who own the materials being transported, the local fire department in the jurisdiction where an accident occurs, and the County of Riverside Department of Environmental Health, Hazardous Materials Unit. These existing plans are expected to response adequately to the accidental spillage of nonhazardous compacted municipal waste.

As part of its own emergency response planning, MRC would maintain adequate staff on-site or on call to provide clean-up workers to supplement Southern Pacific Transportation Company workers and to accomplish trash pickup as necessary. This provision, in conjunction with existing response plans, would provide adequate mitigation for the potential increase in accidents.

Rail delivery of refuse to the landfill site is the intended primary means of transportation. It is possible, however, that longer delays in the rail transport system as a result of catastrophic disruption of the rail service could occur. There are several means by which the flow of waste could be handled. There will be a surplus of containers within the system that can be used to load refuse. These could be temporarily stored at the transfer stations or on rail sidings. The maximum length of storage would be limited to a period of time to be established in the emergency response plan that will be approved by the appropriate state or county agency.

Over the life of the Project, it is possible that an interruption of rail service could occur as a result of an earthquake, other acts of nature, or rail strike. In the event that the rail movement of filled containers is delayed beyond the period permitted, the containers themselves are designed to be used in a variety of transport modes; and they could be shifted from rail transport to truck transport. At full capacity of 20,000 tpd, an additional 650 trucks per day would be required to handle the portion of the refuse normally carried by rail. This additional

response would help ensure steady flow of refuse to the Project site or to alternate area landfills depending upon the location of the train disruption. Under emergency conditions, adequate landfill space would be found for deposition of the refuse. It is expected that these occurrences would be infrequent and of short duration; therefore, impacts (e.g., noise, air quality, traffic, or public safety) would not be significant.

The additional impacts on traffic, air quality, fuel consumption, or other areas can only be determined by assuming specific locations of the rail disruption. Repair of the rail service and resumption of transport by rail at the earliest possible time would, of course, obtain the highest priority.

The railroad right-of-way grant would include the repair and maintenance of the currently unused railroad and the construction of a new railroad spur entering Rail Yard II. The Eagle Mountain Road right-of-way grant would entail the repair and maintenance of a portion of the presently washed-out truck road. Maintenance of the rail and road rights-of-way would have a positive impact on the potential for public exposure to nonhazardous waste materials resulting from truck and rail accidents.

The land exchange, consisting of private and public lands, would have no impact on public safety.

Mitigation. The Project design incorporates measures to minimize public safety impacts, such as providing available staff to assist in the removal of spilled waste in the event of an accident.

Significance After Mitigation. Implementation of the Project design measures would reduce public safety impacts due to accidental spillage of municipal solid waste to below a level of significance.

4.2.7.2 No Action Alternative

Impacts. The No Action Alternative would preclude the occurrence of any potential public health and safety impacts associated with rail and truck transport of solid waste.

Mitigation. No mitigation measures are required.

Significance After Mitigation. The potential for public health and safety impact from increased worker hazard potential is not significant.

4.2.7.3 Reduced Volume of Onsite Disposal Alternative

Impacts. The potential impacts and control measures under this alternative would be identical with those of the proposed Project. A change in landfill volume/configuration would not alter daily operations of the Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into a reduced-scale Project design would reduce the potential for public health and safety impacts to below the level of significance.

4.2.7.4 Alternate Road Access Alternative

Impacts. The potential impacts and public safety control measures under this alternative would be identical with those of the proposed Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project would reduce the potential for public health and safety impacts to below the level of significance.

4.2.7.5 Rail Access Only Alternative

Impacts. The potential health and safety impacts from public safety hazards under this alternative would be similar to those of the proposed Project. Transport of waste by rail only would preclude potential impacts associated with truck spillage or traffic accidents. Public safety control measures under this alternative would also be identical to those of the proposed Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce the potential for public health and safety impacts to below the level of significance.

4.2.7.6 Landfill on Kaiser Land Only Alternative

Impacts. The potential impacts and safety control measures under this alternative would be identical with those of the proposed Project. A change in landfill volume/configuration would not alter daily operations of the Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project would reduce the potential for public health and safety impacts to below the level of significance.

4.2.7.7 Landfill Development/No Townsite Development Alternative

Impacts. The potential impacts and safety control measures under this alternative would be identical with those of the proposed Project. A change in landfill volume/configuration would not alter daily operations of the Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project would reduce the potential for public health and safety impacts to below the level of significance.

4.3 Traffic and Transportation

This section evaluates the impacts of the proposed Project and the alternatives using the standards of significance developed for railroads and roadways. The characteristics of the proposed Project and its rail impacts are presented first, followed by the characteristics and impacts related to the highway system. Additional information on Project-related traffic and transportation is contained in Section 3.3 and in Appendix D of this EIS/EIR, *Traffic/Impact Analysis*. Analysis of circulation impacts in the context of the County of Riverside General Plan is presented in Section 4.5, Land Use.

4.3.1 Standards of Significance

According to Appendix G of the CEQA Guidelines, a project will normally have a significant effect on the environment if it will cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system. Consistent with this definition of "significant effect," the standards of significance presented below have been developed for rail and roadway traffic for the proposed Project. These standards are derived from nationally recognized assessment criteria or have been developed on the basis of discussions with the local agency responsible for a specific mode of transport. A detailed discussion of the methodology for establishing criteria for rail transport and roadways is contained in Appendix D of this EIS/EIR.

4.3.1.1 Rail Transport

Three aspects of rail transport are addressed in this section: (1) actual rail operations; (2) delays to vehicles at rail/highway crossings; and (3) the hazard or risk of conflict at rail/highway crossings (i.e., safety). Because no nationally recognized criteria exist for assessing these elements, objective criteria have been derived from communication with applicable regulatory entities, existing literature, and professional judgment. The established criteria are discussed below.

- **Rail Operations.** The Project would result in a significant impact on local and regional rail operations if trains serving the proposed landfill would, according to the Southern Pacific Transportation Company (SPTC), conflict with SPTC's ongoing regional rail operations. (The SPTC has defined a deficient condition as one where a proposed schedule is not feasible.)

- **Rail At-grade Crossing Delay.** An important concern of the public when assessing the effects of increased train traffic is the delay to highway traffic when a train crosses an at-grade crossing. A detailed set of equations is used in the report *The Feasibility of Hauling Solid Waste by Railroad from the San Gabriel Valley to Remote Disposal Sites* (Southern California Association of Governments [SCAG], April 1988). The delay at an at-grade crossing is a function of the time of crossing blockage, highway traffic volume, and the rate at which vehicles resume normal operations after stopping

for a train. The time it takes for vehicles to resume normal operations is a function of the number of traffic lanes available and the percent of trucks in the traffic stream.

- Any substantial delay in automobile and truck traffic at at-grade crossings, as defined by the methodology in the SCAG feasibility study, as a result of the proposed Project would be considered a significant impact.

- **Rail Safety.** The most widely used measure of rail safety at at-grade crossings is known as the hazard index, the intent of which is to identify the relative estimated hazard among the crossings included in the analysis. It is not intended to identify specifically the high or low probability of accidents, nor is it meant to predict rail/vehicular traffic accidents resulting from increases in train activity.

  - Any substantial increased hazard in automobile and truck traffic at at-grade crossings, which is determined on the basis of data developed by the Department of Transportation (Bezkorovainy, Georgy, and Holsinger, Robert—*Optimum Hazard Index Formula for Railroad Crossing Protection for Lincoln, Nebraska,* 1967), as a result of the proposed Project would be considered a significant impact.

4.3.1.2 Roadways and Unsignalized Intersections

The roadway segment analysis and the intersection operations analysis will be based on methodologies presented in the *Highway Capacity Manual* (Transportation Research Board, *Special Report 209,* Washington, D.C., 1994), which is the most widely recognized standard for roadway impact analysis in the United States and provides analytical methodologies explicitly intended for assessing the types of conditions found in the regional highway network that would serve the proposed Project.

The roadway segments serving the proposed Project site have been analyzed using the methodology for two-lane highways, which can be used to determine the level of service (LOS) for a segment of roadway (see Section 3.3 and Tables 3.3-3 and 3.3-5). The LOS is reported on a scale of A to F, with A representing excellent operating conditions and F representing extremely congested conditions. LOS C is the typical limit of acceptable operations in nonurbanized areas. The LOS for roadways is based on: (1) traffic volume, (2) directional distribution of traffic, (3) roadway lane and shoulder widths, and (4) proportion of heavy vehicles in the traffic flow. A maximum service flow rate has been developed for each individual roadway segment on the basis of these four characteristics that corresponds to LOS A through LOS F. The service flow rates calculated in this way are compared to the actual or projected traffic volume on the segment to determine the LOS of a particular segment. (Definitions for LOS are contained in Tables 3.3-2 and 3.3-3 in Chapter 3).

- An impact would be considered significant if traffic volumes attributable to the Project cause peak-hour or daily-average LOS to decrease below LOS C by one or more levels (e.g., from LOS C to LOS D, or E, or F)

- Unsignalized intersection operating conditions can also be assessed using techniques outlined in the Highway Capacity Manual, Chapter 10 (Transportation Research Board, 1994). The significance standard is identical to the significance standard for roadway segments.

4.3.2 Rail Transport

4.3.2.1 Proposed Action

Impacts. The proposed action is for the Eagle Mountain Landfill to receive waste, either by rail or truck, for the first 3 years of operation. After that time, waste will be transported to the site only by rail, including the Eagle Mountain Railroad except for a small amount of waste delivered by commercial garbage trucks or private cars and trucks for waste originating in the Chuckwalla Valley (see Section 2.1.4). The Eagle Mountain Railroad, which is shown in Figure 4.3-1, formerly was used to carry iron ore from the mine site to various offsite locations and was originally designed to service trains significantly heavier than the trains proposed for hauling waste to the landfill site. The railroad routes and key route interchanges are shown in Figure 4.3-2.

The unit trains will consist of one or more diesel locomotives pulling 14 articulated rail cars. The rail cars will be "twin stack," as manufactured by Gunderson and Greenbriar Intermodal. Each car will be 256 feet long and consist of five articulating units, each with a well-type configuration capable of holding two 40-foot by 8-foot by 8-foot containers (for a total capacity of 10 containers). For purposes of this analysis, the estimated length of the overall train, including the engine(s), is conservatively approximated to be 8,000 feet or less. A single train could transport approximately 3,500 tons of waste. Although an average of 4.5 shipments per day is projected to arrive at the Project site, the rail yard(s) will ultimately be equipped to receive up to six trains per day.

Rail At-Grade Crossing Delays. The shipments from each route interchange will use one or more of the rail segments, which are identified in Section 3.3, to reach the landfill. For example, the San Bernardino County location would use Segment 1 of the rail system to transport refuse to the Eagle Mountain Landfill, and the resulting delays would apply only to traffic using at-grade crossings along this rail segment. Increase in Project-related traffic does not result in a significant impact on crossing delays.

The La Verne and Irwindale locations could potentially ship refuse to the landfill via more than a single route. For instance, the containers from La Verne could be shipped directly west to the Project site via Segments 1 and 6; or shipments could be routed through Bassett Junction to the landfill, via Segments 1, 2, 3, 7, and 8. The routes analyzed in the delay analysis are shown in Figure 3.3-1 and presented in Table 4.3-1. The total amount of waste

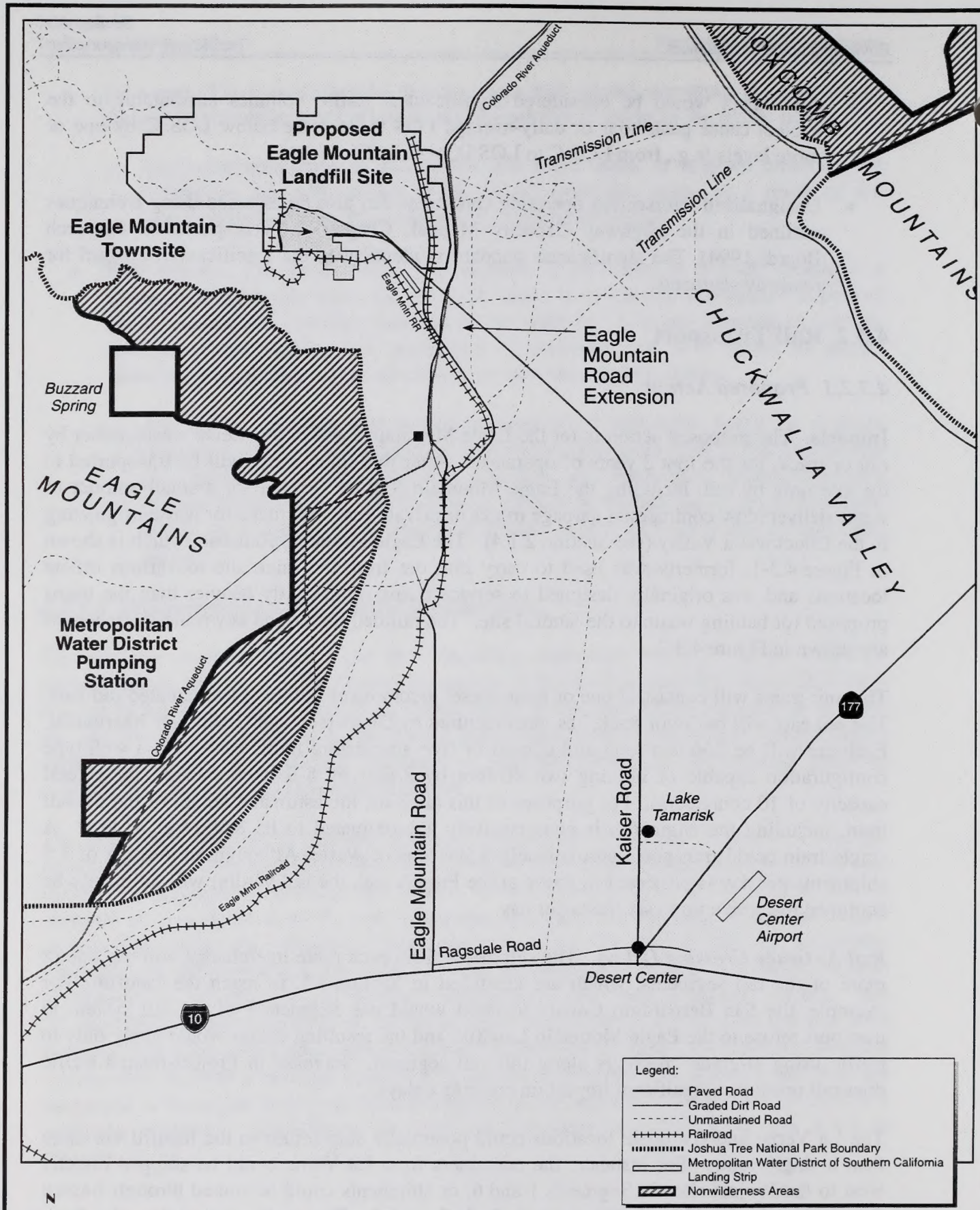
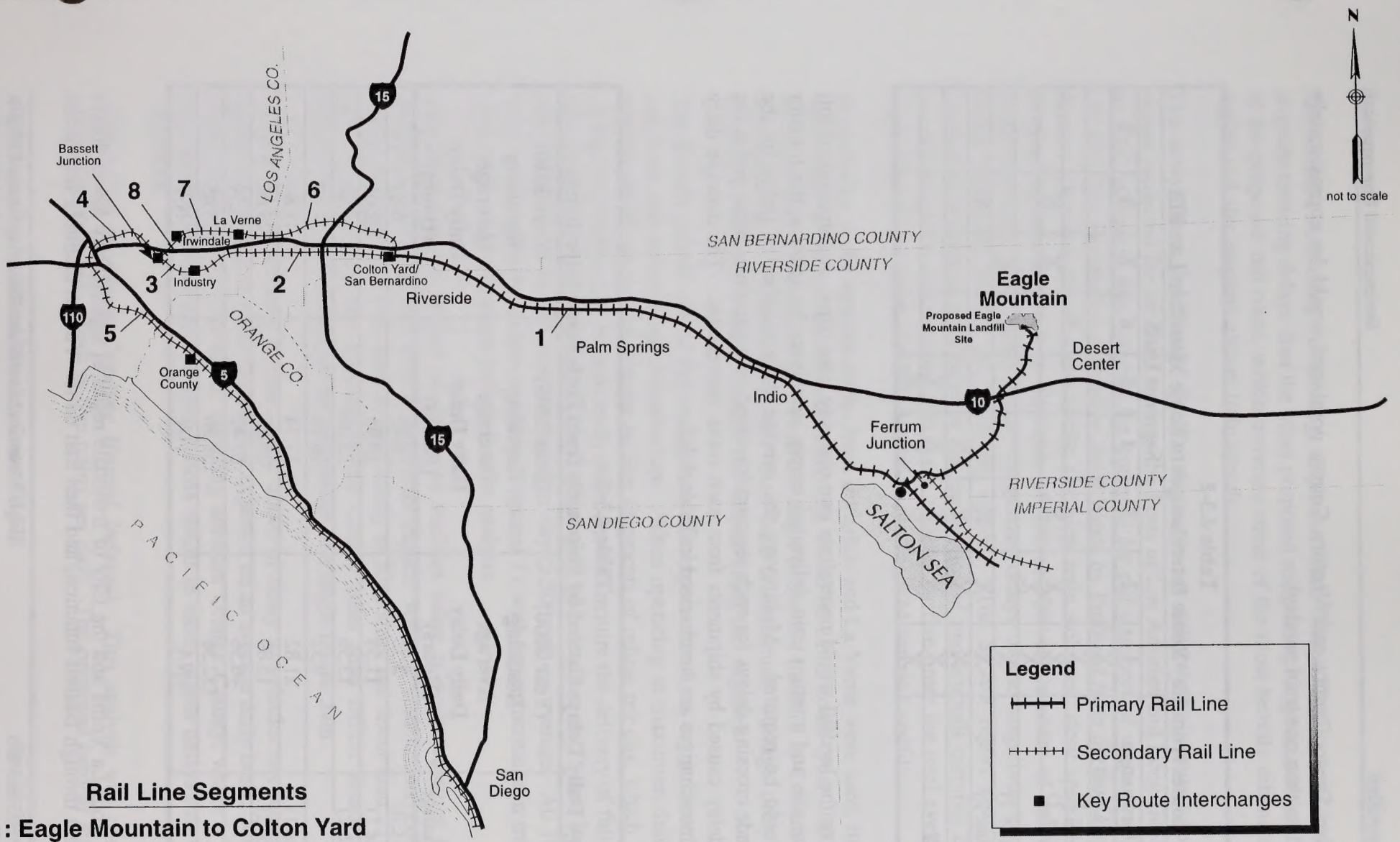


Figure 4.3-1
Proposed Roadway and Railroad Access to Project Site
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2MHILL

m115231.T6.20 rr access 6/96



Rail Line Segments

1: Eagle Mountain to Colton Yard
2: Colton Yard to City of Industry
3: City of Industry to Bassett Junction
4: Bassett Junction to SPTC's LA Transportation Center
5: SPTC to Orange County
6: Colton Yard to La Verne
7: La Verne to City of Irwindale
8: City of Irwindale to Bassett Junction
SPTC = Southern Pacific Transportation Company

Figure 4.3-2
Key Route Interchanges Along the Major Rail Line Segments
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2MHILL

m115231.T6.20 trnsfr 6/96

by rail from San Diego County and Ventura County combined would be approximately 3,500 tpd (i.e., less than one train per day).

Table 4.3-1
Rail Routes from Key Route Interchanges to Eagle Mountain Landfill

	Segment Used								
Key Route Interchange	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
San Bernardino County	X								
La Verne (Route 1)	X					X			
La Verne (Route 2)	X	X	X				X	X	
Industry	X	X							
Irwindale (Route 1)	X					X	X		
Irwindale (Route 2)	X	X	X					X	
Los Angeles	X	X	X	X					
Orange County	X	X	X	X	X				
San Diego	X	X	X	X	X				

Each shipment to the landfill would necessitate two one-way train trips. A shipment of full containers to the site and a return train delivering empty containers for reuse at the transfer station both would be required. Multiplying the average daily number of trains by the estimated at-grade crossing delays for each segment traversed on a particular route yields the average daily delay caused by shipments from each route interchange. The average daily delays at route interchanges are summarized in Table 4.3-2.

Table 4.3-2
Average Daily Delays Caused by Shipments from Each Route Interchange

Route Interchange	**(Year 2000) Resulting Average Daily Delay (Hours)**	**(Year 2005) Resulting Average Daily Delay (Hours)**	**(Year 2010) Resulting Average Daily Delay (Hours)**
San Bernardino Co.	3.52	6.43	6.89
La Verne (Route 1)	11.58	19.98	22.01
La Verne (Route 2)	13.56	23.08	25.24
Industry	9.32	16.16	17.67
Irwindale (Route 1)	21.82	37.74	41.84
Irwindale (Route 2)	15.89	26.85	29.03
Los Angeles	46.56	67.42	66.59
Orange County	132.38	158.96	135.45
San Diego	NA	NA	NA

The shipments from La Verne and the City of Irwindale result in significantly lower delays when routed west through Bassett Junction, and then east on the Yuma/Alhambra line to the

Project site. Assuming this routing, shipments from Orange County would result in greater at-grade crossing delays than the other proposed route interchange locations. This is a result of the proposed rail route, which traverses some of the most heavily urbanized areas in the region and also requires slower train speeds.

The delays from the Orange County shipments are still relatively minor compared to the delays projected for facilities such as the Ports of Los Angeles and Long Beach. According to a SCAG report that assesses the potential for rail transport of waste to distant locations (SCAG, *The Feasibility of Hauling Solid Waste by Railroad from the San Gabriel Valley to Remote Disposal Sites,* April 1988), the high train volumes, slow speeds, and proposed daytime operations result in estimates of 100 to 300 vehicle-hours of delay at individual grade crossings. The SCAG report categorizes delays of the magnitude estimated for the Eagle Mountain landfill as "relatively minor." The SCAG report also states that the approximate average daily delay at the intersection of two arterials carrying 20,000 vehicles per day would be an estimated 300 hours of delay, or five times the total average daily delay caused by the transport of refuse via rail to the Eagle Mountain Landfill.

In summary, if the optimal routes from Irwindale and La Verne were used, the total average daily delay at the rail line at-grade crossings would be 219.3 hours (year 2000). Total delay along the primary segment (i.e., from the Eagle Mountain Landfill to Colton) would average approximately 27 vehicle-hours per day, with a maximum average delay at any grade crossing of between 1 and 2 minutes per vehicle along this segment.

The Project-related use of rail transport is not expected to have a significant impact on the rail lines and surrounding infrastructure. When operating at maximum daily capacity, the landfill would receive an average of five shipments of refuse per day, which would result in 10 one-way shipments, because each shipment will require the delivery of full containers and the return of empty containers. Waste shipments from Ventura and Santa Barbara Counties are anticipated to be less than one train per day (3,500 tpd) on average. All 10 trains per day will use the primary analysis segment (Segment 1), with lesser increases in train traffic along each of the other segments included in the analysis.

The impact of the Project on delays to vehicles using at-grade crossings is minimal and therefore, not considered to be a significant impact. Average vehicle delays of 1 to 2 minutes can be expected for each train in the County of Riverside; and fewer than 23 vehicles would be affected at any one crossing in the County other than Dillon Road in Indio, where 24 vehicles would be delayed by the passage of a single refuse train.

A total of fewer than 220 hours (year 2000) of delay to vehicles encountering refuse unit trains when using at-grade crossings is expected on an average daily basis. Most of this delay would occur along Segment 5, servicing northern Orange County, where a combination of high traffic volumes and low train speeds results in much higher delays than along other rail segments.

Rail Safety (At-Grade Crossing Hazard Indexes). This analysis was conducted for the worst-case scenario, which is five trains per day). The proposed landfill also increases the

inherent potential for hazards associated with a railroad line crossing a highway at-grade. The increase occurs because of the projected increase in the amount of train traffic along the various rail lines. This section quantifies the expected change by recalculating the hazard indexes previously presented for future conditions without the Project (see Appendix D), including the increased rail traffic, and compares the recalculated hazard index values and rankings to the values and rankings obtained in the analysis of future conditions without the Project.

The recalculated hazard indexes ranged from a low of 15 at Ramon Boulevard/Dowling Avenue and Francisquito Avenue (both of which are in the City of Baldwin Park) to a high of 191,312 at Slauson Avenue in Los Angeles. The highest hazard index is the Dillon Road grade crossing, which is on the primary analysis segment (i.e., Segment 1). Although the hazard index value increased by nearly 21 percent (from 102,588 to 124,571), this location is still ranked 22nd overall among the crossings analyzed.

The calculated index for 22nd Street under future conditions with the Project is 95,142 among crossings analyzed. The at-grade crossing at 50th Avenue in Coachella Valley has a hazard index of 34,709 under future build conditions.

The overall effect of the Project on the hazard indexes of the study area at-grade crossings is to increase the values by 10 to 30 percent, without significantly altering the overall rankings of the various at-grade crossings. The reason no major change in the overall rankings of the various at-grade crossings occurs is that, although the net increases in train traffic resulting from the Project are different for the various rail segments analyzed, these increases are proportional to the baseline train traffic on each segment.

Segment 1 (see Figure 4.3-2), where the greatest increase in train traffic would occur, is also the most heavily traveled segment. The proportional effect of five trains on the hazards along this segment are, therefore, similar to the proportional effect of one or two trains on less heavily traveled rail segments in Orange or Los Angeles Counties.

The Project is not expected to have a significant impact on safety within the study area. The forecasted increase in background highway traffic volumes between 1995 and 2010 has a much greater effect on the calculated hazard indexes for the at-grade crossings analyzed than the Project-related increase in train traffic (see Appendix D). The Project will not significantly affect the ranking of crossings along the primary analysis segment when compared to other crossings included in the safety analysis, nor will any County of Riverside crossing reach the top 7 percent threshold of the hazard index. This threshold is defined as the indication of a deficient condition. Therefore, there are no significant impacts related to rail safety associated with the Project.

Mitigation. Because the at-grade delays are not considered to be a significant impact, no mitigation measures are required. To address the safety of at-grade crossings in the vicinity of the Project, warning signs will be placed in select appropriate locations.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project would reduce the potential for rail safety impacts to below the level of significance.

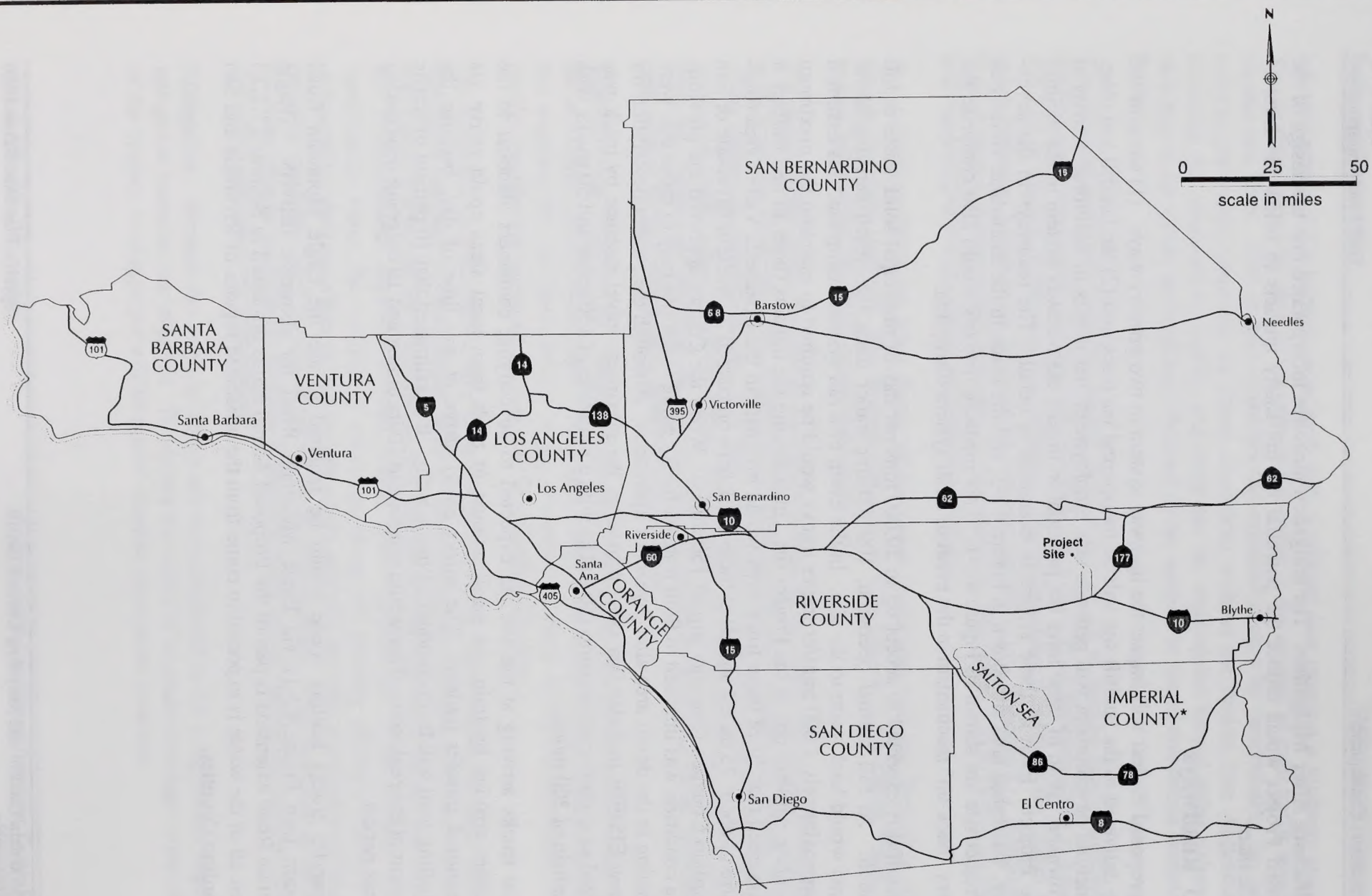
4.3.3 Roadways

The proposed Project will impact the highway system in two primary ways: (1) some of the waste delivered to the landfill site will be transported via truck and (2) the landfill and other commercial development will generate new employment that results in additional activity at the Townsite. Both of these have the potential to impact the roadway system in the vicinity of the Project. Each of these effects is examined in detail. The roadways in the seven-county, wasteshed area are shown in Figure 4.3-3, and the roads in the immediate vicinity of the Project site are shown in Figure 4.3-1. This roadway network would also comprise the primary "back-up" mechanism in the event of a rail system disruption.

The landfill is expected to accept up to 20,000 tons per day of municipal solid waste at full operation. At full normal operation, 100 transfer trailer truck rigs (each carrying about 20 tons) would haul waste to the site. In the event of a rail system disruption, it is assumed that approximately 1,000 transfer trailer trucks would be required to maintain the maximum daily refuse delivery rate to the Project site. In analyzing the impacts (both air and traffic), it was assumed that 50 of these truck trips would originate in the Coachella Valley area (one-way trip of about 75 miles) and 50 of these truck trips originated in Western Riverside or San Bernardino Counties (one-way trip of 150 miles). When the County approved the previous EIR, a condition was imposed to limit transfer trucks going to the site only to those that were originating in the desert area after 3 years of operations. Although the project description for this new EIS/EIR includes this same provision, the maximum travel distance by truck was analyzed as a worst-case scenario (50 trucks with a roundtrip of 150 miles and 50 trucks with a roundtrip of 300 miles).

Typical trucks arriving at the site are expected to be carrying containers identical to the containers arriving by train. A small amount of trash from local areas could arrive via conventional transfer trailers. The trucks could arrive at any time of day, because the marshalling yard will be operational 24 hours a day. It is estimated that 10 percent of traffic will occur at the peak hour. This would translate to 10 incoming and 10 outgoing trips during the peak period.

All transfer trucks hauling waste would be required to use the Eagle Mountain Road extension (see Figure 4.3-1) via Eagle Mountain Road for shipment delivery. (Eagle Mountain Road extension is part of the Proposed Action and is discussed in Section 2.1.2.2.) Almost all of the waste is expected to come from the urbanized regions of Riverside and San Bernardino Counties.



*Note: Imperial County is not in the proposed seven-county wasteshed area but is included for geographic reference

Figure 4.3-3
Roadways in the Seven County Wasteshed Area
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

Layer Control: 1 .4
m115231.T6.20 ays 6/96

The Coachella Valley Association of Governments (CVAG) has taken bids for the construction and operation of a materials recovery facility (MRF) or transfer station (TS) and the associated hauling of residential waste by transfer trucks to be designated landfill. One of the bidders proposed using an alternate system. This alternate system, if selected, would eliminate the need for siting and constructing a MRF or TS in the Coachella Valley because the waste would be collected directly into sealed containers that have a net waste capacity of about 6 tons. A diesel tractor-trailer rig (truck) then hauls one, two, or three of these containers to a landfill. Each tractor-trailer rig could haul 6 to 18 tons of refuse. If this alternate is chosen by CVAG, and if CVAG chooses to select Eagle Mountain Landfill as its preferred disposal site, the County of Riverside would need to approve this change in the description of the proposed Project.

The landfill is expected to ultimately employ approximately 250 people. The specific trip generation data for the proposed Project are based on the Institute of Transportation Engineers' (ITE) *Trip Generation Manual, Fifth Edition* (Institute of Transportation Engineers, 1994). Using this source, the land use category General Light Industry (ITE land use code 110) is most applicable in this instance.

The daily traffic volume related to traffic other than the trucks delivering refuse to the site is slightly less than 500 total daily trips, or 250 inbound and 250 outbound trips. Based on relative population densities, it is estimated that 85 percent of the trips will be to and from the west, while 10 percent have origins or destinations to the east, and 5 percent travel to and from the north on Desert Center/Rice Road. These trips would include both employee travel to and from work, and trips made by delivery vehicles, service vehicles, and other traffic to and from the Project site.

Although it is anticipated that the landfill employees will reside at the Townsite (which would likely result in some trips terminating at the Townsite), the analysis in this EIS/EIR makes the conservative assumption that all traffic entering the Townsite will exit the Townsite. For instance, the Townsite's residential area located near the landfill will be renovated, and the relocation of employees to this area could significantly reduce the peak-hour traffic associated with the landfill, compared to having employees commute from areas outside of the Townsite, such as Blythe. Transfer truck traffic hauling waste to the landfill is restricted to Eagle Mountain Road. All other traffic will gain access to the Project site via both Eagle Mountain Road and Kaiser Road. Figure 4.3-4 illustrates the projected trip distribution for the Townsite. In addition to the Townsite-related traffic attributable to the proposed Project, additional traffic outside the vicinity of the Project (i.e., in the greater Coachella Valley area) will be generated. This traffic and its potential impacts are included in the following analysis.

Trip generation has been calculated, based on the specific plan for the Townsite. This trip generation is summarized in Table 4.3-3 and is included in the analysis as part of the Project.

The assumptions outlined above form the basis for distribution of Project-related traffic to the roadway network for both daily and peak-hour conditions. Figures 4.3-5 and 4.3-6 present the expected daily traffic volumes for year 2000 build-out conditions (average daily and

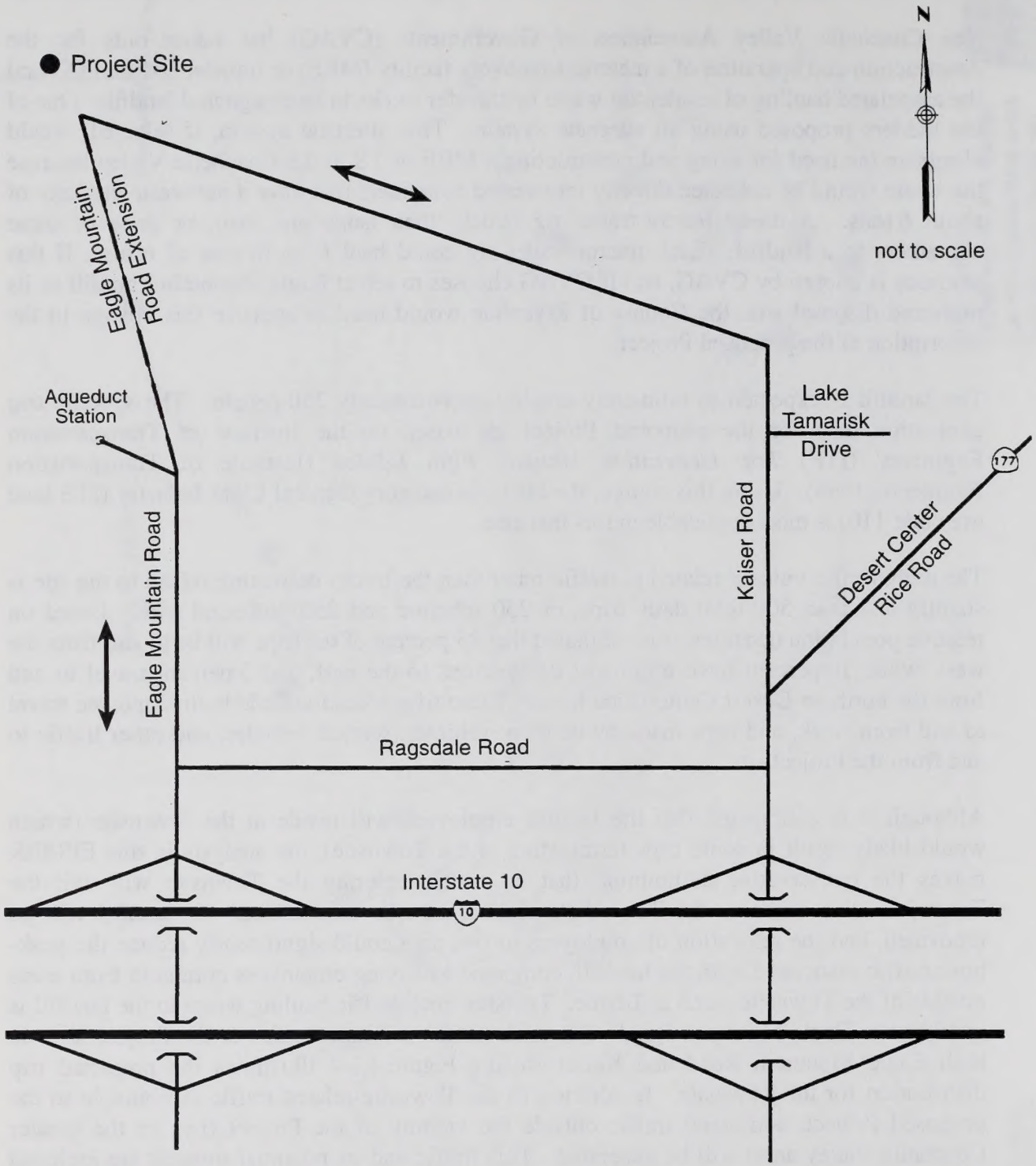


Figure 4.3-4
Project Trip Directional Distribution (Townsite)
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

Table 4.3-3
Townsite Trip Generation Summary

Land Use	Size (AC)	Units	ADT Rate	ADT	A.M. Peak					P.M. Peak				
						Split		Trips			Split		Trips	
					Rate	% In	% Out	In	Out	Rate	% In	% Out	In	Out
Commercial/Manufacturing	12.95		38.88	503	7.44	93	7	90	7	8.37	53	47	57	51
Outdoor Storage	27.82	*	30	835	1.8	50	50	25	25	2.7	50	50	38	38
Community Correctional Facility	9.09	**	0	0	0	0	0	0	0	0	0	0	0	0
Commercial/Manufacturing	7.78		38.88	302	7.44	93	7	54	4	8.37	53	47	35	31
Residential 8 DU/AC	4.71	38	9.55	360	0.74	26	74	7	21	1.01	64	36	24	14
Recreation	4.16		2.99	12	2.87	72	28	9	3	3.14	35	65	5	8
Commercial/Retail	11.36	***	700	5566	14.7	60	40	100	67	49	50	50	278	278
Residential 2.1 DU/AC	29.13	61	9.55	584	0.74	26	74	12	33	1.01	64	36	40	22
Residential 3.6 DU/AC	90.95	327	9.55	3127	0.74	26	74	63	179	1.01	64	36	212	119
Waste Water Treatment	49.18	*												
Open Space Recreation	168.16	*												
				11290				359	339				688	561

Notes:
* = Assumed no external trip generation
** = Facility already existing. No new trips generated.
*** = Trip reduction rate due to pass-by included

peak-hour) on study area roadways. Figures 4.3-7 and 4.3-8 show build-out volumes for the year 2005. Figures 4.3-9 and 4.3-10 show build-out volumes for the year 2010.

4.3.3.1 Roadway Segment Operating Conditions

The roadway segment operations analysis has been repeated for future conditions (i.e., years 2000, 2005 and 2010) with the Project. The highest hour of site-specific traffic generation was used to estimate the peak-hour impacts because the peak hour of traffic generation attributable to the Project is likely to control the overall peak-hour traffic on roadways within the study area. The traffic generated by the Project was then added to the peak-hour traffic volumes at each analysis location under no-build conditions, yielding the most conservative possible peak-hour traffic volumes under Project build conditions.

The results of the operations analysis, which are summarized in Tables 4.3-4 through 4.3-9 and discussed below, indicate that acceptable roadway operations will continue to occur on all segments analyzed. The Project, therefore, is not expected to result in significant impacts to roadway segment operations. This analysis also applies to traffic in the Coachella Valley. Project-related roadway impacts are greatest for the immediate Project vicinity location of the Townsite. These impacts include: (1) employee-generated traffic; (2) transfer trailer trucks; and (3) commercial garbage trucks or private cars and trucks for waste from the Chuckwalla Valley and Blythe. The impacts to Coachella Valley roadways, unlike the Townsite, are dispersed (i.e., Coachella Valley roadways will not experience the concentrated traffic flows projected for the Townsite). Because of this dispersion and the fact that acceptable roadway conditions will occur on all segments analyzed (including the Townsite), roadway impacts to Coachella Valley will be below those anticipated for the Townsite, and are therefore below the level of significance.

Table 4.3-4
Year 2000 Roadway Level-of-Service Summary

Roadway Segment Level-of-Service Summary	Year 2000 Base	Year 2000 + Project
Eagle Mountain Road n/o Ragsdale Road	A	C
Kaiser Road n/o Desert Center/Rice Road	A	B
Kaiser Road n/o Lake Tamarisk Drive	A	B

n/o: north of

Table 4.3-5
Year 2005 Roadway Level-of-Service Summary

Roadway Segment Level-of-Service Summary	Year 2005 Base	Year 2005 + Project
Eagle Mountain Road n/o Ragsdale Road	A	C
Kaiser Road n/o Desert Center/Rice Road	A	B
Kaiser Road n/o Lake Tamarisk Drive	A	B

n/o: north of

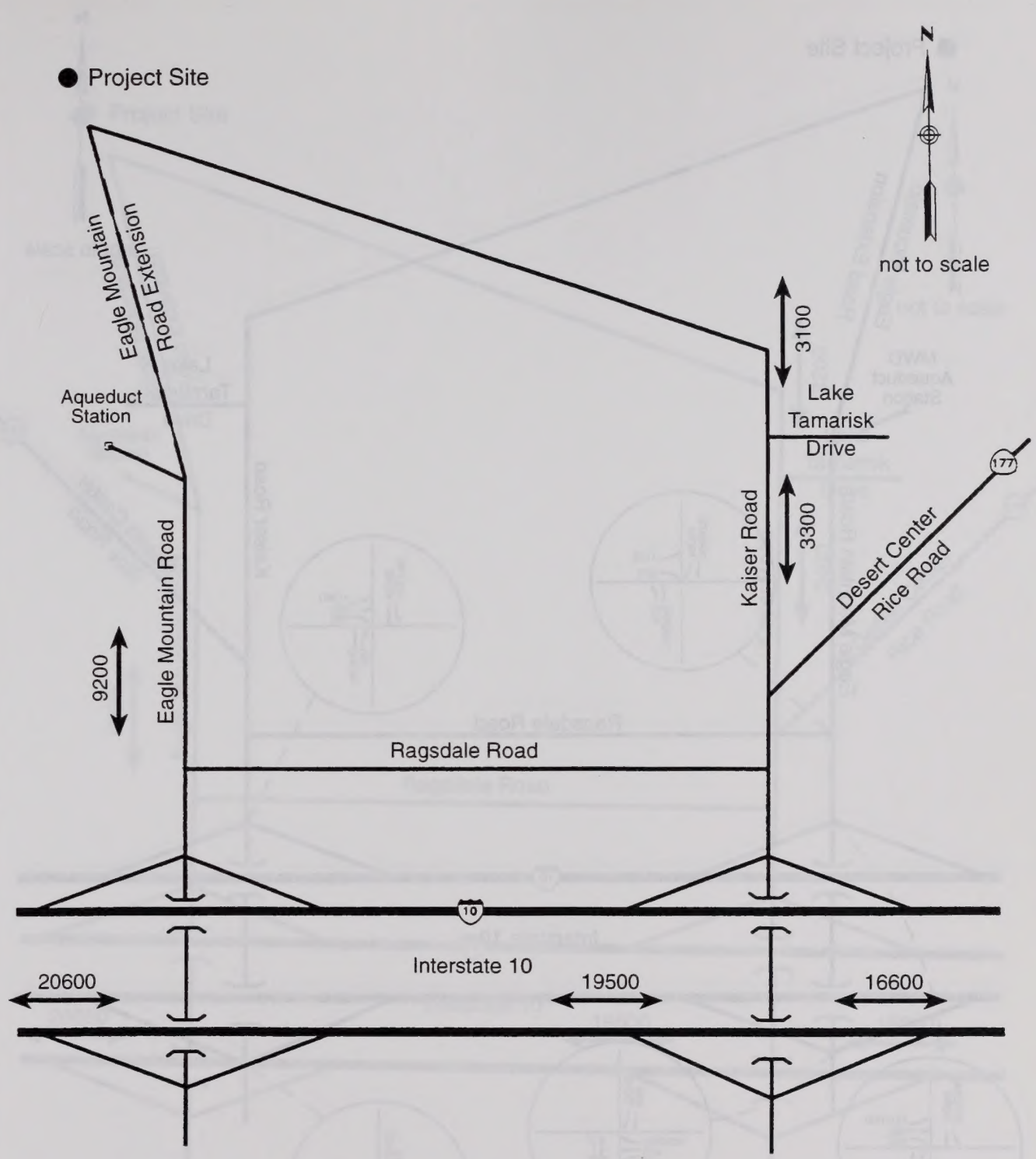


Figure 4.3-5
Forecast 2000 Average Daily Traffic (With Project)
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 DKS8 6/96

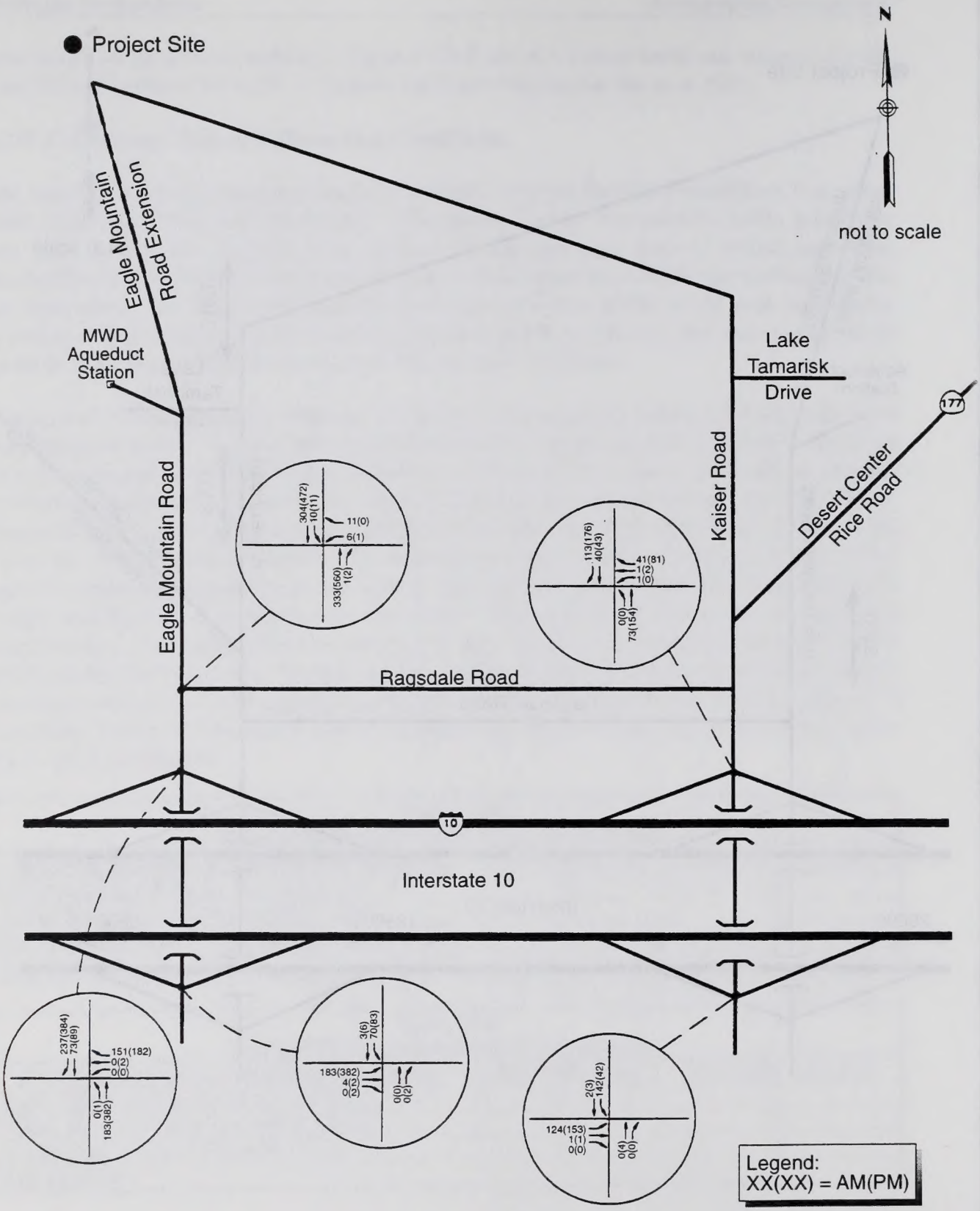


Figure 4.3-6
Forecast 2000 Peak Hour Traffic Volumes (With Project)
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2MHILL

m115231.T6.20 DKS9 6/96

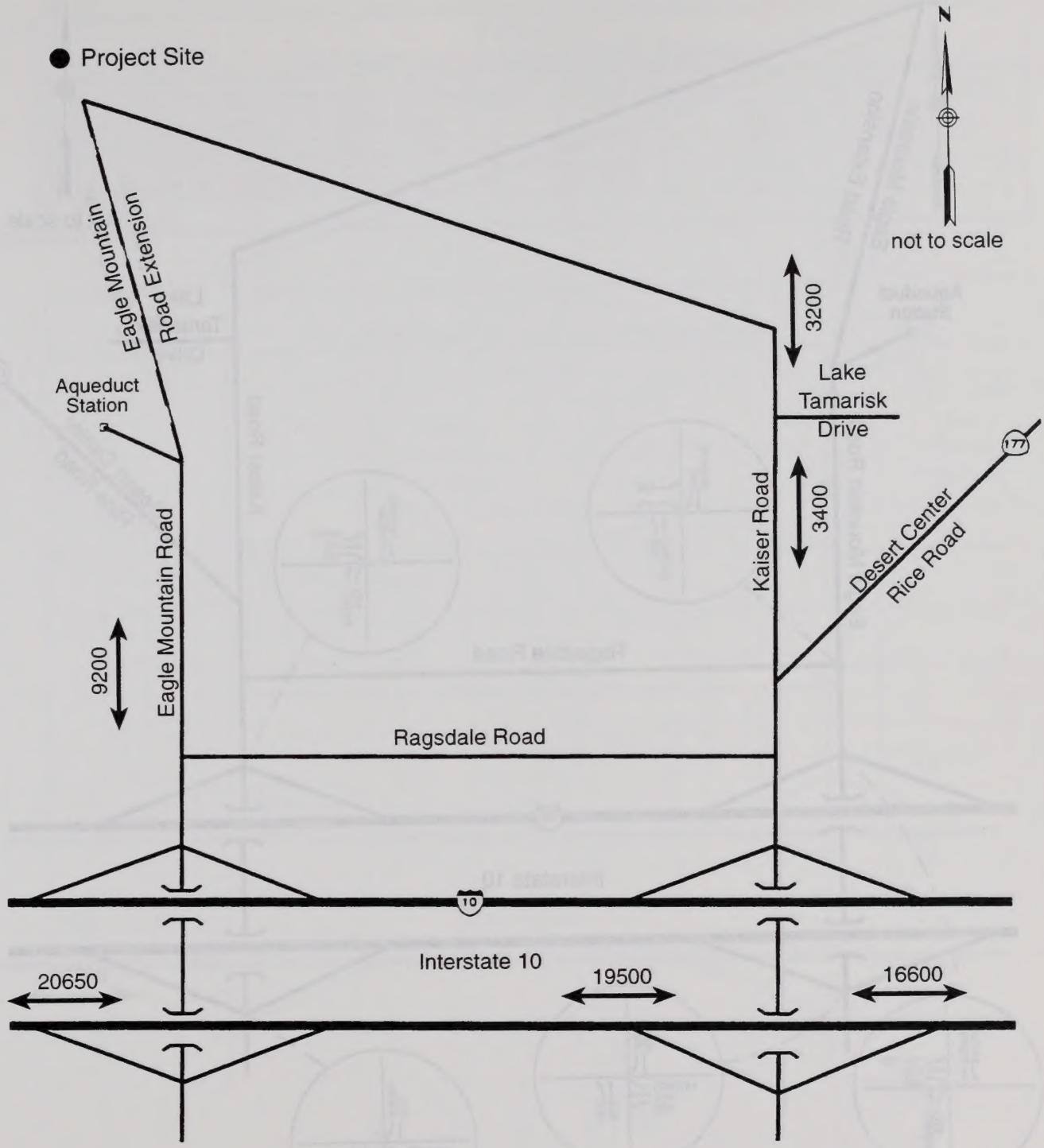


Figure 4.3-7
Forecast 2005 Average Daily Traffic (With Project)
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2MHILL

m115231.T6.20 DKS10 6/96

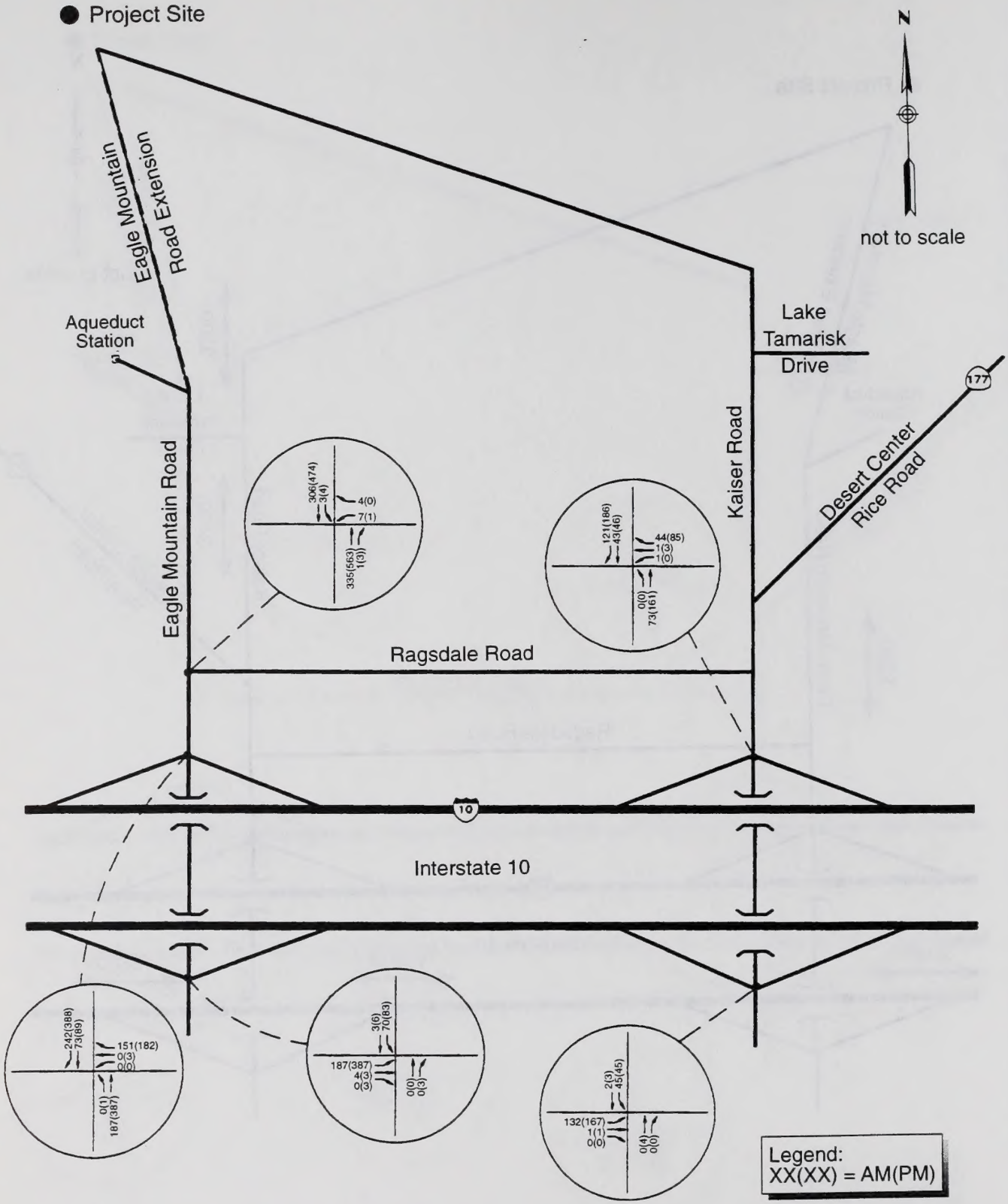


Figure 4.3-8
Forecast 2005 Peak Hour Traffic Volumes (With Project)
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 DKS11 6/96

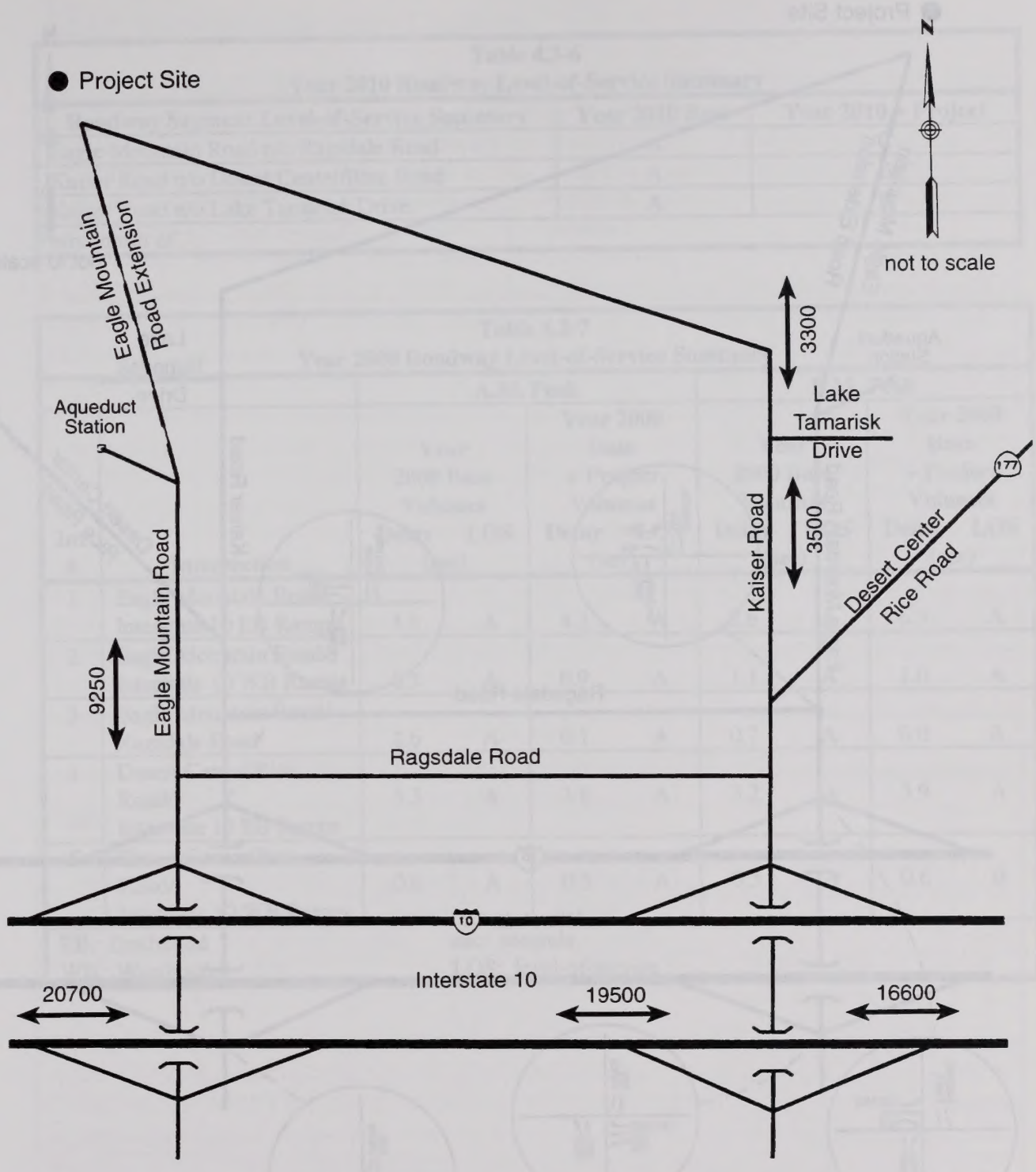


Figure 4.3-9
Forecast 2010 Average Daily Traffic (With Project)
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 DKS10a 6/96

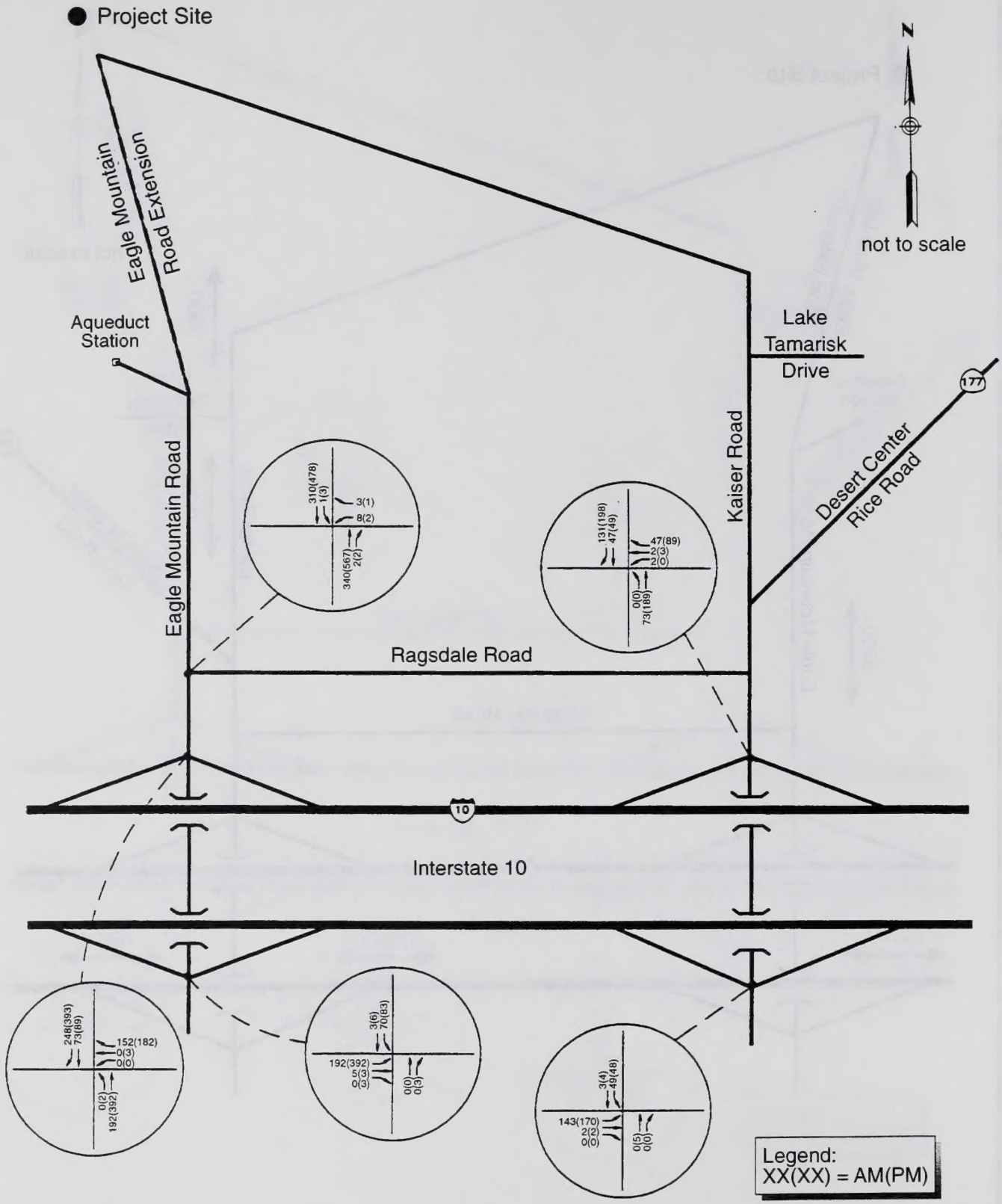


Figure 4.3-10
Forecast 2010 Peak Hour Traffic Volumes (With Project)
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 DKS9a 6/96

Table 4.3-6
Year 2010 Roadway Level-of-Service Summary

Roadway Segment Level-of-Service Summary	Year 2010 Base	Year 2010 + Project
Eagle Mountain Road n/o Ragsdale Road	A	C
Kaiser Road n/o Desert Center/Rice Road	A	B
Kaiser Road n/o Lake Tamarisk Drive	A	B

n/o: north of

Table 4.3-7
Year 2000 Roadway Level-of-Service Summary

		A.M. Peak				P.M. Peak			
Int #	Intersection	Year 2000 Base Volumes Delay (sec)	LOS	Year 2000 Base + Project Volumes Delay (sec)	LOS	Year 2000 Base Volumes Delay (sec)	LOS	Year 2000 Base + Project Volumes Delay (sec)	LOS
1	Eagle Mountain Road/ Interstate 10 EB Ramps	3.3	A	4.3	A	2.6	A	6.9	A
2	Eagle Mountain Road/ Interstate 10 WB Ramps	0.3	A	0.9	A	1.1	A	1.0	A
3	Eagle Mountain Road/ Ragsdale Road	2.6	A	0.1	A	0.7	A	0.0	A
4	Desert Center/Rice Road/ Interstate 10 EB Ramps	3.3	A	3.8	A	3.2	A	3.9	A
5	Desert Center/Rice Road/ Interstate 10 WB Ramps	0.6	A	0.5	A	0.5	A	0.6	B

EB: Eastbound
WB: Westbound
sec: seconds
LOS: level-of-service

Table 4.3-8
Year 2005 Intersection Level-of-Service Summary

Int #	Intersection	A.M. Peak				P.M. Peak			
		Year 2005 Base Volumes Delay (sec)	LOS	Year 2005 Base + Project Volumes Delay (sec)	LOS	Year 2005 Base Volumes Delay (sec)	LOS	Year 2005 Base + Project Volumes Delay (sec)	LOS
1	Eagle Mountain Road/ Interstate 10 EB Ramps	3.3	A	4.3	A	2.6	A	7.0	A
2	Eagle Mountain Road/ Interstate 10 WB Ramps	0.3	A	0.9	A	1.0	A	1.0	A
3	Eagle Mountain Road/ Ragsdale Road	2.7	A	0.1	A	0.7	A	0.0	A
4	Desert Center/Rice Road/ Interstate 10 EB Ramps	3.3	A	3.8	A	3.2	A	4.0	A
5	Desert Center/Rice Road/ Interstate 10 WB Ramps	0.6	A	0.5	A	0.5	A	0.6	A

EB: Eastbound
WB: Westbound
sec: seconds
LOS: level-of-service

Table 4.3-9
Year 2010 Intersection Level-of-Service Summary

Int #	Intersection	A.M. Peak				P.M. Peak			
		Year 2010 Base Volumes Delay (sec)	LOS	Year 2010 Base + Project Volumes Delay (sec)	LOS	Year 2010 Base Volumes Delay (sec)	LOS	Year 2010 Base + Project Volumes Delay (sec)	LOS
1	Eagle Mountain Road/ Interstate 10 EB Ramps	3.3	A	4.4	A	2.7	A	7.1	A
2	Eagle Mountain Road/ Interstate 10 WB Ramps	0.4	A	0.9	A	1.0	A	1.0	A
3	Eagle Mountain Road/ Ragsdale Road	2.4	A	0.1	A	1.1	A	0.0	A
4	Desert Center/Rice Road/ Interstate 10 EB Ramps	3.4	A	3.9	A	3.2	A	4.1	A
5	Desert Center/Rice Road/ Interstate 10 WB Ramps	0.6	A	0.5	A	0.5	A	0.6	B

EB: Eastbound
WB: Westbound
sec: seconds
LOS: level-of-service

4.3.3.2 Intersection Operating Conditions

The highest hour of site-specific traffic generation was used to estimate peak-hour impacts attributable to the Project, because the peak hour of traffic generated as a result of the Project is likely to control the overall peak-hour traffic at intersections within the area of study. The site-generated traffic was then added to the peak-hour traffic volumes at each analysis location under no-build conditions, yielding the most conservative possible peak-hour traffic volumes under Project conditions.

During the peak hour, a total of 1,278 trips is expected to enter and exit the Project site, in addition to the previously described truck trips related to the delivery of refuse. A total of 582 trips would leave the Project site, and 696 vehicles would be entering the Project site. The same directional distribution of trips described for daily traffic was used to distribute the peak-hour traffic. Operations analyses were conducted for each study area intersection, and no significant degradation in operations is anticipated as a result of the Project-related traffic. All traffic movements analyzed would continue to operate above LOS C, with minimal delays and no lack of capacity.

Sufficient excess roadway capacity exists to serve all increases in traffic volumes in the foreseeable future. Background growth in traffic unrelated to specific developments would likely occur at a rate of 1 to 2 percent per year or less, and such growth could be accommodated for decades. Additional increases in traffic of 2 percent per year for 40 years would result in a doubling of traffic volumes. This increase could be accommodated by the existing roadway infrastructure.

Specific developments generating additional traffic would have to be studied to determine the impacts of traffic and mitigate any deficiencies identified.

At full normal operation, the Project is expected to generate a total of approximately 11,990 new trips, either to or from the proposed landfill and the Townsite on a daily basis. This total number of trips includes 200 new waste haul truck trips each day, with 100 inbound trucks delivering refuse, 100 outbound trucks carrying away empty containers, and nearly 11,790 other new trips, both passenger vehicle and related truck traffic.

During the peak hour of daily traffic to and from the Project site, an estimated total of just under 1,300 trips would be generated. This would include 10 refuse trucks both entering and exiting the site during the course of the hour, and 1,280 other trips comprised of arriving and departing employees, delivery and service traffic, and any other Townsite-related traffic. The majority of this traffic is expected to travel to and from the west.

Operations analyses at study area intersections indicate that excellent operating conditions will continue to exist in the study area including future conditions (see Tables 4.3-7 and 4.3-8, and 4.3-9). All study area traffic movements will continue to experience acceptable LOS.

Upon buildout of the proposed Project, traffic circulation and safety will be served adequately by the existing Townsite road system (Singer, 1996). The street layout, number of traffic lanes, and traffic control devices will provide adequate intersection capacity. Modifications to the geometrics and alignments of select intersections within the Townsite will be initiated, however, to maximize traffic safety and improve intersection capacity. The planned intersections and Townsite road alignments are shown in Figure 4.3-11.

The proposed Project is consistent with the circulation policies and goals contained within the County of Riverside General Plan. As detailed in Section 4.5, Land Use, the specific plans currently under preparation for the landfill and Townsite respond to all required General Plan land use elements, including those pertaining to circulation adequacy under land use categories I through IV.

Mitigation. Because acceptable roadway segment and intersection operations will continue to occur on all segments analyzed, and all traffic movements analyzed would continue to operate above LOS C, the Project is not expected to result in significant impacts to roadway segment or intersection operations. To further minimize the potential for waste shipment truck traffic to use roads in the Project vicinity other than the designated route, the Project applicant will publish the correct route (Eagle Mountain Road) and provide it to contracted haulers. In addition, appropriate signage will be provided at key highway access points, and truck traffic will be directed to Eagle Mountain Road upon exiting the Project site.

Significance Mitigation. The potential for impacts to transportation services would be reduced below the level of significance.

4.3.4 Alternatives

This section assesses the effects of traffic and transportation on all the Project alternatives.

4.3.4.1 No Action Alternative

The No Action Alternative would leave the Eagle Mountain mine site in its present condition, and no landfill would be developed. No renovation to the Townsite beyond existing, approved uses would occur. No repopulation would occur in the Townsite and no additional trips attributable to new residents would occur. The existing Eagle Mountain Road would not be improved, and the Eagle Mountain Road extension would not be constructed. Use of the Eagle Mountain Railroad would be limited to intermittent shipments of aggregate products associated with limited mining-related activities. Metropolitan Southern California communities would continue to rely on existing, expanded, or new landfills with the associated traffic impacts of these facilities. The No Action Alternative would leave the Townsite in its present condition, and no further redevelopment beyond existing approved uses would occur.

Impacts. The No Action Alternative would preclude the occurrence of any potential impacts to services associated with the Project.

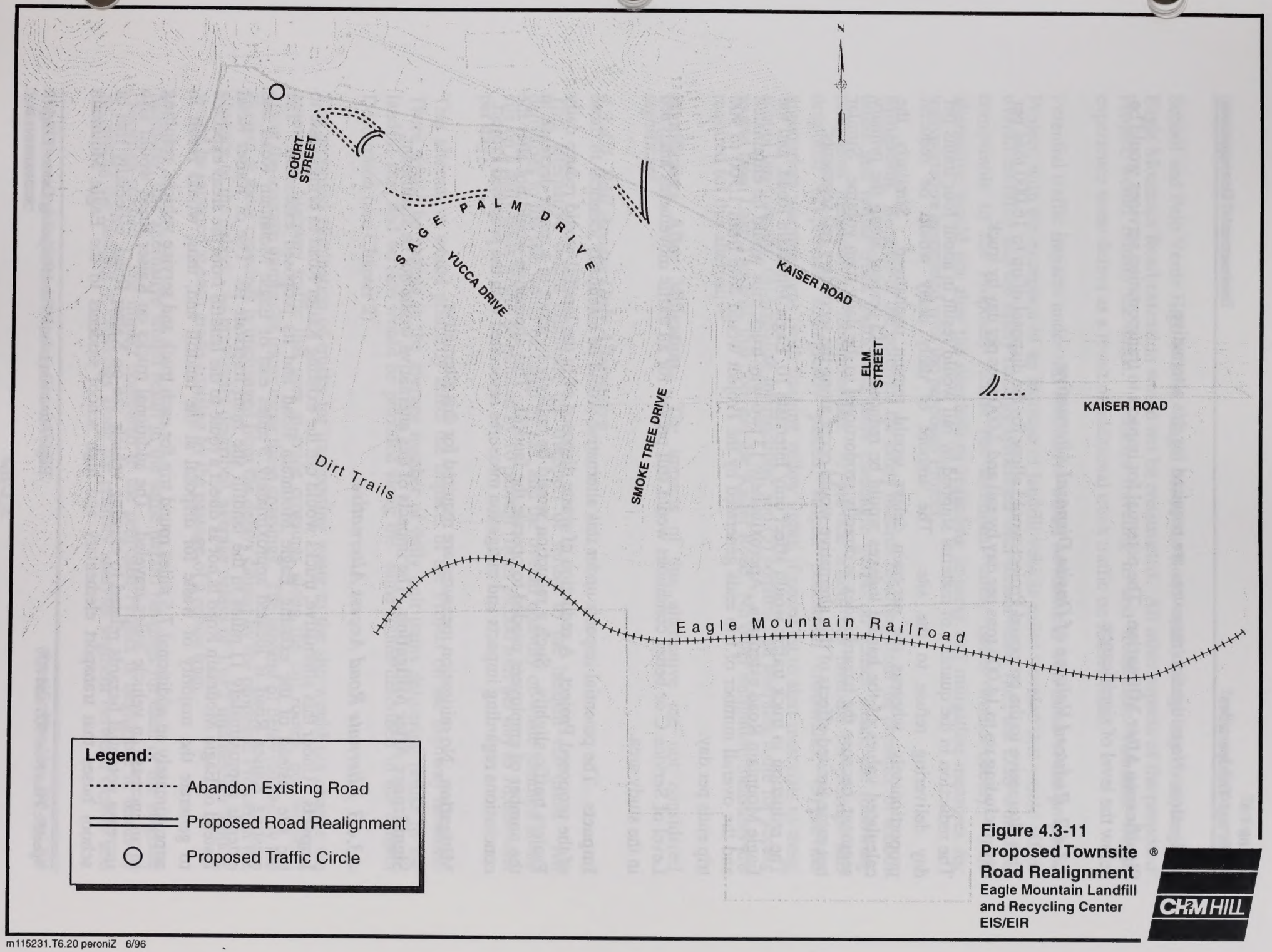


Figure 4.3-11
Proposed Townsite Road Realignment
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 peroniZ 6/96

Mitigation. No mitigation measures are required for this alternative.

Significance After Mitigation. The potential for impacts to transportation services would be below the level of significance.

4.3.4.2 Reduced Volume of Onsite Disposal Alternative

This alternative to the proposed Project would allow for the disposal of up to 16,000 tons per day, including up to 14,000 tons per day by rail and 2,000 tons per day by truck.

The reduction in the quantity of material shipped by rail would result in about four trains per day delivering refuse to the site. The amount of daily delay would be reduced proportionately, whereas the per-train delays would remain unchanged. Similarly, the calculated values of the hazard indexes would be reduced by 15 percent along the primary segment, because the hazard index is directly proportional to the daily train volume. Similar but more limited effects of this alternative would occur along the secondary rail segments.

The reduction in truck traffic would affect only Interstate 10, Eagle Mountain Road, and the Eagle Mountain Road extension. Approximately 13 two-way truck trips would be eliminated and the overall number of trip ends generated by the Project would drop from 1,300 to 900 trip ends per day.

Level of Service C or better conditions would still prevail for all traffic movements analyzed in the study area.

Impacts. The potential impacts under this alternative would be essentially identical to those of the proposed Project. A reduction of waste disposed of in the landfill would reduce daily Project traffic slightly. Such a reduction would be unlikely to result in a major decrease in the number of employees needed to operate the landfill. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. No mitigation measures are required for this alternative.

Significance After Mitigation. The impacts of this alternative would not be significant.

4.3.4.3 Alternate Road Access Alternative

Impacts. Under this alternative, trucks would use the existing Kaiser Road to bring waste to the site instead of the existing Eagle Mountain Road and its proposed extension. The existing Kaiser Road is located approximately 3 miles east of Eagle Mountain Road and extends approximately 11 miles to the landfill site from Interstate 10. Use of Kaiser Road instead of Eagle Mountain Road is not as direct a route to the landfill from the areas expected to generate the majority of waste for disposal at the landfill and, thus, would result in approximately an additional 7.5 miles round trip for each truck and service vehicle, resulting in an increase in vehicle miles traveled. The additional trucks on Kaiser Road would also increase potential hazards related to existing vehicle use on Kaiser Road, especially that of school buses that transport elementary and high school students to the Eagle Mountain

School and Palo Verde High School. Eagle Mountain Road would not be improved, and the Eagle Mountain Road extension would not be constructed. All other aspects of the proposed Project would remain the same. Vehicles traveling to and from Lake Tamarisk would experience some delays as a result of additional truck traffic on Kaiser Road.

Potential traffic impacts under this alternative would be identical with those of the proposed Project, with the exception of an increase in landfill vehicle miles traveled that would affect overall mobility and the safety hazards associated with school buses (i.e., the LOS would be comparable to the Proposed Action but additional safety issues would occur). This alternative would not alter the conclusions regarding impacts and mitigation measures for transportation associated with the proposed Project.

Mitigation. Because of the potential for safety hazards resulting from the presence of school buses and refuse truck traffic and more passenger traffic on Kaiser Road, the following mitigation measures are recommended: (1) provide school bus turnouts for pickups and dropoffs; (2) provide strategically placed, striped pedestrian crosswalks; (3) provide appropriate warning signs (with flashing yellow lights, if possible) to alert motorists to these school bus turnouts; (4) signalize intersections; and (5) construct an alternate route for access to and from Lake Tamarisk that does not use Kaiser Road. No other mitigation measures are required for this alternative.

Significance After Mitigation. The impacts of this alternative are not considered significant.

4.3.4.4 Rail Access Only Alternative

This alternative would eliminate the transport of refuse to the landfill via truck. All deliveries to the site would be made by rail, and the overall quantity of waste handled at the site on a daily basis would be reduced by 10 percent (from 20,000 tons per day to 18,000 tons per day).

This alternative would primarily affect the impacts of the Project on the highway network. There would be change in the average number of daily unit trains delivering refuse to the landfill site, and service would be provided along the same routes described in the Project Description (see Chapter 2).

The proposed elimination of trucks for transporting waste to the site would not change the amount of highway traffic that uses at-grade crossings along the rail routes, nor would it affect the average number of trains using these crossings. The amount of delay caused by the Project at these crossings is unchanged from the delays caused by the proposed Project in the absence of the delays. As previously described, average delays of 1 to 2 minutes per vehicle would be incurred at each grade crossing by the passage of a refuse train.

Similarly, this alternative would result in the same hazard rankings for each of the at-grade crossings studied. The impact compared to the proposed Project is negligible in terms of increasing the ranking of crossings along the primary analysis segment between Colton and

Eagle Mountain. The changes caused by increases in highway volumes at these crossings resulting from regional growth are greater than the changes that would be attributed solely to the Project.

Impacts. This alternative would significantly reduce the overall volume of traffic to the Project site and would also decrease the percent of truck traffic generated by the landfill. Eliminating the 200 roundtrip truck trips delivering refuse to the site reduces the overall number of trip ends generated by the landfill from 1,300 trip ends to 500 trip ends daily. Truck trips to the Project site would be made on an incidental basis only, for purposes such as supply deliveries. The benefit of this reduction in truck traffic would be evident along the Kaiser Truck Road and on Eagle Mountain Road between the Kaiser Road and Interstate 10 interchange, the proposed route for delivery of waste to the landfill site.

Traffic volumes on Kaiser Road and Desert Center/Rice Road would remain unchanged from the conditions described for the Project. Intersection operations at the locations analyzed would continue to be excellent, because this alternative would not cause any further increase in traffic beyond that projected for the proposed Project.

Mitigation. No additional mitigation measures would be required for this alternative.

Significance After Mitigation. The potential for impacts would be reduced to below the level of significance.

4.3.4.5 Landfill on Kaiser Land Only Alternative

This alternative would allow for operation of the landfill in the absence of implementing the proposed land exchange between the BLM and Kaiser. The proposed rights-of-way would still be implemented. The landfill would comprise only Kaiser-owned lands in and around the East Pit for landfill development. The landfill would accept a maximum of 10,000 tpd of municipal solid waste. Landfill design, construction, operation, environmental monitoring, and closure and postclosure are identical to the proposed Project.

Under this alternative, the way in which waste would be transported to the landfill for disposal is identical to the proposed Project. A maximum of four trains per day, 6 days per week will be processed at peak operation. Waste will also be hauled by no more than 100 transfer trucks per day. Vehicle access to the Project site will also be achieved as previously described. Waste containers arriving at the landfill will be handled as described above.

Impacts. The amount of traffic for landfill construction and operations would be slightly reduced under this alternative. The expected life of the landfill would be reduced to about 23 years. The number of landfill employees would also be slightly reduced from the level of the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce potential impacts to transportation services to below the level of significance.

4.3.4.6 Landfill Development/No Townsite Development

Under this alternative, the landfill would proceed as described under the proposed Project but the Townsite Specific Plan would not be approved and improvements would not occur within the existing Townsite. It is assumed under this option that employees working at the landfill would commute to the site from Desert Center, Blythe, and other communities.

Impacts. Under this option, it is assumed that the landfill would be developed, but that no improvements would be made to the Townsite. Employees working at the landfill would not live in the Townsite and would most likely reside in and commute from other communities, thus increasing potential vehicle miles traveled and external trips due to the landfill. The most likely communities to absorb the additional employment would be Desert Center, Blythe, and eastern Coachella Valley communities. This increase would be offset by the decrease in trip generation resulting from landfill employees commuting to the landfill site from other communities.

Mitigation. No mitigation measures are required or warranted.

Significance After Mitigation. Because traffic demands are reduced and will not substantially affect service capacity, potential impacts are below the level of significance.

4.4 Air Quality

This section presents criteria of significance for air quality and a summary of potential impacts of Project construction and operation. A more detailed analysis of the proposed Project's effects on air quality is included in Appendix E.

4.4.1 Standards of Significance

To evaluate the air quality impacts associated with the Project alternatives, various tools used by local, state, and federal air quality agencies to determine whether a project's air quality impacts are significant have been identified. The measures of significance are those used for the evaluation of industrial sources of pollution. These measures include the threshold levels used to determine the requirements for issuing permits to construct or operate, the limits of detection or reportability of ambient concentrations, and levels that trigger measures in areas with severe air quality problems. The measures of significance vary depending on the pollutant, the existing air quality classifications in and near the Project area, and the emissions from the proposed Project and other planned or existing projects in the vicinity of the proposed Project. The proposed standards of significance are summarized in Table 4.4-1 for nitrogen dioxides (NO_x), volatile organic compounds (VOCs), 10-micron particulate matter (PM_{10}), carbon monoxide (CO), and sulfur dioxide (SO_2). They are included in greater detail in Appendix E.

Table 4.4-1
Standards of Significance Summary

Agency	Level	Pollutant	Comment
SCAQMD	25 tons/year 25 tons/year 70 tons/year 100 tons/year 100 tons year	NO_x VOC PM_{10} CO SO_2	Definition of a major source
SCAQMD	0 lb/day	All	Level above which BACT is required
SCAQMD	4 tons/year 29 tons/year	All except CO CO	Level above which offsets are required
EPA	4 µg/m^3 Annual 8 µg/m^3 24-hr	PM_{10}	EPA Class 1 PSD Increment
ARB	0.19 pphm (1-hr)	NO_x	ARB measured accuracy of 0.76 percent times 25 pphm standard
ARB	1 pphm (1-hr)	NO_x	Precision to which ARB reports concentrations
EPA	$\Delta E = 2.0$ (contrast=0.05)	N/A	Screening threshold for Level 1 and Level 2 screening
EPA	$\Delta E = 1.0$ to 4.0 (contrast = 0.025 to 0.10)	N/A	Approximate threshold of plume/haze perceptibility
EPA	$\Delta E = 4.0$ (contrast = 0.10)	N/A	Detection of slight discoloration by most people (probability of 90 percent detection with high contrast background)

The federal visibility program established by the Clean Air Act (CAA, Section 169A) declares a national goal of preventing and remedying visibility impairment in mandatory Class I areas caused by manmade air pollution. Under this program, Joshua Tree National Park (JTNP) has been identified by the EPA as a Class I area where visibility is an important value. States are required to develop a long-term strategy for making reasonable progress toward the visibility goal. In addition, the states are to require the installation of best available retrofit technology (BART) on any major source placed into operation after August 7, 1962, if that source "emits any air pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility" in a listed mandatory Class I area.

The criteria for assessments of individual sources are defined in an EPA Workbook for Plume Visual Impact Screening and Analysis (Revised), dated October 1992. In this workbook, criteria are identified that can be used to determine if a source might impair visibility in parks. These criteria are based on the contrast between the plume and its surroundings. To address the dimension of color as well as brightness, a color contrast parameter, ΔE, is used as the primary basis for determining the perceptibility of plume visual impacts in screening analyses. For bright viewing objects, a contrast of 0.05 percent translates to a ΔE of approximately two. The literature suggests an upper, best estimate and lower threshold for perceptibility. The lower threshold is based on the use of laboratory-derived estimates of perceptibility thresholds as screening criteria; whereas in the natural environment, the upper threshold recognizes that the observer in the field is likely to be much less sensitive to contrast and color difference. Table 4.4-1 suggests the range and the best-estimate threshold based on the current understanding of perceptibility. These criteria are discussed further in Appendix E.

4.4.2 Project Emissions and Impacts

4.4.2.1 Proposed Action

Emissions from the proposed Project would be associated with a number of activities. These include both stationary sources (such as landfill gas flares) and mobile equipment (such as trains hauling waste). Mobile equipment includes train locomotives, on-highway haul trucks, and off-highway equipment. Emissions are also generated by short-term construction activities, landfill road use, mine tailing reclamation, solid waste transfer, and activities connected with Townsite development. This section also discusses air quality impacts to JTNP.

Construction Emissions. Emissions during the initial construction of the proposed Project will be generated from five main construction projects. These five projects are (1) improvement/extension of the existing Eagle Mountain Road; (2) construction of the Phase I intermodal rail/truck marshaling yard, including refurbishing existing warehouse and shop facilities; (3) reconstruction of the existing Eagle Mountain rail line; (4) preparation of the first phase of the landfill; and (5) Townsite renovation.

The initial construction period will take approximately 9 months. Each year, additional liner systems will be constructed, which will require a period of about 2 to 3 months. Maximum emissions will occur when all five of the initial construction projects are active simultaneously. Total emissions associated with the initial construction projects are shown in Table 4.4-2.

Table 4.4-2
Total Emissions—Initial Construction Projects
(lb/day)

Operations	NO_x	CO	PM_{10}	VOC	SO_2
Construction Equipment Combustion Emissions (excluding equipment directly associated with landfill area and Townsite)	1,100	322	58	107	61
Construction Equipment Combustion Emissions (equipment directly associated with landfill area)	460	156	20	31	19
Fugitive Dust (excluding operations directly associated with landfill area and Townsite)	--	--	1,368	--	--
Fugitive Dust (operations directly associated with landfill area)	--	--	86	--	--
Construction Equipment Combustion Emissions and Fugitive Dust (equipment directly associated with Townsite improvements)	1,913	416	136	130	0
Total	3,473	894	1,668	268	80

Operation Emissions. Solid waste will be transported to Eagle Mountain by two modes: trains and trucks. Approximately 90 percent of the waste will be transported by train, primarily from the Los Angeles area, although waste will also be transported by train from parts of Ventura, Santa Barbara, and San Diego Counties. The remainder of waste will be hauled from portions of the County and other desert communities by truck. Both transportation modes will produce exhaust emissions from the combustion of diesel fuel.

Based on a maximum expected daily waste haul rate of 18,000 tons, the proposed Project includes five train round-trip deliveries per day, depending on the amount of waste hauled per train. An estimated 2,000 tons per day of waste could be transported to the Project site by on-highway haul trucks, resulting in up to 100 truck round-trips to the Project site per day with approximately 20-ton loads.

Onsite material handling emissions will be generated from heavy equipment, including the fleet of hostling vehicles that will haul containers from the intermodal rail/truck marshaling yards to the landfill face and the other general activities associated with landfill operation (such as overhead cranes, crawled tractors spreading the dumped waste to shape the fill, and compactors that roll over the graded surface to develop the desired volume reduction of deposited material). Although liner construction activities are associated with the initial construction of the proposed Project, liner construction will occur periodically during the development of the landfill. Therefore, emissions from this activity are also included in the emissions associated with the day-to-day operation of the facility. Other activities that will generate emissions include exhaust emissions from loaders, dump trucks, and bulldozers;

compactors used at the final cover construction area and working face of the landfill to spread and compact the cover material; vehicles used onsite to maintain roadways used to transport liner, waste, and cover material; and water trucks used to water-flush paved roads and unpaved roadway surfaces during landfill operations to mitigate fugitive dust emissions and enhance compaction of surface material. Finally, the Project would also include support operations such as a maintenance paint shop, locomotive sand silo, emergency generators, and fuel storage and dispensing operations.

Landfill gas will be formed over time as waste decomposes. In the absence of oxygen, hydrocarbon wastes break down to form predominantly carbon dioxide and methane. Trace quantities of toxic gases will also be formed by these processes. Stringent design and monitoring requirements of the SCAQMD and the EPA municipal solid waste landfill regulations require that the landfill gas collection system capture at least 90 percent of the gas generated. Captured landfill gas will be piped to a combustion system for incineration. To account for the worst-case combustion and fugitive landfill gas emissions, it was assumed that 100 percent of the landfill gas generated is piped to the combustion system and that 10 percent of the gas escapes into the atmosphere. With this approach, there is some double-counting of emissions. The gas combustion system will initially use flares to burn the methane and other gases. As the gas generation rate of landfill gases increases with the increasing age of deposited waste, alternative energy recovery systems, such as a gas turbine power plant or landfill gas processing plant, may be substituted for the flares.

The total project emissions are shown in Table 4.4-3. Also shown in Table 4.4-3 are emissions generated from activity associated with workers commuting to and from the Project site and commercial development at the Eagle Mountain Townsite. Overall, the emissions shown in Table 4.4-3 take into account the emission controls that the Project must incorporate to comply with the SCAQMD and the EPA emission standards, as well as the additional mitigation measures proposed for the Project.

Impacts. An analysis was performed on the impacts of the Project on ambient concentrations of pollutants using the EPA's recommended models for point sources, area sources, and volumes sources in simple and complex terrain (ISCST3). A full description of the modeling efforts is contained in Appendix E, Attachment D. This analysis was performed for the area surrounding the landfill site. A separate analysis of the ambient impacts on the Joshua Tree National Park was also performed. In addition, an analysis of ambient air quality impacts was performed for a typical rail crossing impacted by the Project. Table 4.4-4 presents the results of the air quality modeling analysis.

Table 4.4-3
Total Project Emissions, Proposed Project With Mitigation

Activity	(lb/day) NO_x	CO	PM_{10}	VOC	SO_2	(tons/yr) NO_x	CO	PM_{10}	VOC	SO_2
Offsite Sources										
Trains	3,377	1,170	206	342	157	616	214	38	62	29
On-Highway Trucks	940	451	127	94	26	172	82	23	17	5
Subtotal, Offsite	4,317	1,621	333	436	183	788	296	61	79	34
Onsite Sources										
Trains	104	50	5	14	4	19	9	1	2	1
On-Highway Trucks	3	3	0	0	0	1	0	0	0	0
Townsite	98	1,022	8	83	8	18	187	2	15	1
Onsite Vehicle Exhaust	1,237	764	106	156	95	226	139	19	29	17
Onsite Fugitive Dust	--	--	560	--	--	--	--	102	--	--
Landfill Gas Flares	1,264	903	803	368	468	231	165	147	67	85
Fugitive Landfill Gas	--	--	--	311	--	--	--	--	57	--
Maintenance Shop	--	--	0	12	--	--	--	0	2	--
Emergency Generators	4	29	0	0	0	0	1	0	0	0
Fuel Storage Tanks	--	--	--	2	--	--	--	--	0	--
Leachate/Condensate Tanks	--	--	--	0	--	--	--	--	0	--
Locomotive Sand Silo	--	--	0	--	--	--	--	0	--	--
Subtotal, Onsite	**2,710**	**2,771**	**1,483**	**948**	**575**	**494**	**501**	**271**	**173**	**105**
Project Total	**7,027**	**4,392**	**1,816**	**1,384**	**758**	**1,282**	**797**	**332**	**252**	**139**

Table 4.4-4
Eagle Mountain Landfill and Recycling Center
Proposed Project Without Mitigation
Ambient Air Quality Impacts

Pollutant/ Averaging Time	California Standards	National Standards	Modeled Ambient Impact ($\mu g/m^3$)	Ambient Background Levels[1] ($\mu g/m^3$)	Combined Levels ($\mu g/m^3$)	EPA Class II Increments ($\mu g/m^3$)
NO_x						
1-hour	470	--	323	75	398	--
Annual	--	100	22	6	28	25
SO_2						
1-hour	655	--	38	213	251	--
3-hour	--	1,300	36	--	--	512
24-hour	105	365	12	34	46	91
Annual	--	80	2	11	13	20
CO						
1-hour	23,000	40,000	1,761	10,354	12,115	--
8-hour	10,000	10,000	655	4,304	4,959	--
PM_{10}						
24-hour	50	150	38	210	248	30
Annual	30	50	6	22	28	17

[1]For NOx, CO, and PM_{10}, maximum levels monitored at the Project site. Because ambient SO_X levels were not measured at the Project site, background SO_X levels are the maximum monitored within the SEDAB.
[2]The maximum allowable PM_{10} Class II increment may be exceeded during one 24-hour period at any one location. For the Project with mitigation measures, the Class II increment was not exceeded more than once at any location.

The analysis was performed with a high degree of conservatism. The assumptions are identified in Appendix E, Part 4, of this EIS/EIR. Consequently, actual Project impacts would be expected to be significantly lower than those shown. The data indicate that the unmitigated impacts of the Project would represent the following fractions of the most stringent ambient air quality standards for each pollutant:

Carbon Monoxide (CO)	8%
Nitrogen Dioxide (NO_2)	69%
Sulfur Dioxide (SO_2)	11%
Fine Particulates (PM_{10})	76%

The data indicate that, in the absence of mitigation measures, the proposed Project is not expected to result in a violation of the state or national standards for nitrogen dioxide (NO_2) SO_2, and CO, even in combination with background ambient levels measured at the Project site. For PM_{10}, Project impacts alone are not expected to exceed the state or national standards. The state and national 24-hour average PM_{10} standards, however, are exceeded in the absence of the Project. The impacts of the Project exacerbate violations of the PM_{10} standard.

Air quality impacts can occur at locations in Southern California where rail crossings are at grade and periodically result in traffic backups waiting for a passing train. The worst-case potential air quality impacts at a rail crossing are presented in Table 4.4-5.

Table 4.4-5
Eagle Mountain Landfill and Recycling Center
Proposed Project Without Mitigation
Air Quality Impacts at Rail Crossings

Pollutant/ Averaging Time	Strictest California Standard (ug/m^3)	Strictest National Standard (ug/m^3)	Maximum Impact (ug/m^3)	Percent of Standard (%)
CO (1-hour)	23,000	40,000	332	1.4
NO_2 (1-hour)	470	--	129	27.3

The results of this analysis are presented for 1-hour averaging periods only, because these impacts would occur for only short periods of time during the day. The data indicate that there would be an insignificant impact for carbon monoxide during train crossings. The nitrogen dioxide impact reflects the short-term concentration that could be reached near the intersection, assuming worst-case weather conditions. These levels are likely to overestimate actual concentrations.

The worst-case potential air quality impacts at a rail crossing for the proposed Project with mitigation are presented in Table 4.4-6. The data indicate that there would be an insignificant impact for carbon monoxide during train crossings. The nitrogen dioxide impact reflects the short-term concentration that could be reached near the intersection, assuming worst-case

weather conditions. As with previous analyses, these levels are likely to overestimate actual concentrations.

Table 4.4-6
Eagle Mountain Landfill and Recycling Center
Proposed Project With Mitigation
Air Quality Impacts at Rail Crossings

Pollutant/ Averaging Time	Strictest California Standard (ug/m^3)	Strictest National Standard (ug/m^3)	Maximum Impact (ug/m^3)	Percent of Standard (%)
CO (1-hour)	23,000	40,000	332	1.4
NO_2 (1-hour)	470	--	37	7.9

Joshua Tree National Park Impacts. Table 4.4-7 summarizes potential impacts to JTNP, including acid and nitrate deposition, visibility, and vegetation.

Table 4.4-7
Eagle Mountain Landfill and Recycling Center
Project Impacts on Joshua Tree National Park

Analysis	Significance Criteria[1]	Worst-Case Project Impacts		
		Unmitigated Project	Mitigated Project	Mitigated Reduced Vol. Alternative
Regional Haze	1.0 dv	0.40	0.40	N/A[2]
Acid Deposition	11.0 kg/ha/yr Sulfate 15.0 kg/hr/yr Nitrate	0.68 15.5	0.62 8.2	N/A[2] NA[2]
Prevention of Significant Deterioration-Class I Area	8 $\mu g/m^3$ (24-hr) PM_{10} 4 $\mu g/m^3$ (Ann) PM_{10} 25 $\mu g/m^3$ (3-hr) SO_2 5 $\mu g/m^3$ (24-hr) SO_2 2 $\mu g/m^3$ (Ann) SO_2 2.5 $\mu g/m^3$ (Ann) NO_2	7 1 9 3 0 2	7 1 9 3 0 1	5 1 7 2 0 1
Contrast	Max. Contrast (0.05-0.10)	Max 0.158 0.14% of yr > 0.10 0.66% of yr > 0.05	Max 0.100 0.00% of yr > 0.10 0.33% of yr > 0.05	Max = 0.082 0.00% of yr > 0.10 0.14% of yr > 0.05
Visibility	Max Delta-E[3] (2.0-4.0)	Max = 6.7 0.34% of yr > 4.0 1.02% of yr > 2.0	Max = 3.9 0.00% of yr > 4.0 0.45% of yr > 2.0	Max = 3.2 0.00% of yr > 4.0 0.33% of yr > 2.0
Vegetation	NO_x SO_2	Not Significant Not Significant	Not Significant Not Significant	N/A[2] N/A[2]

[1]Definition of Criteria:
Regional Haze (dv)—Deciviews, a visual index to characterize visibility through uniform hazes.
Acid Deposition (kg/ha/yr)—Annual amount of pollutant (weight in kg) deposited in area (hectare = 2.471 acres).
Prevention of Significant Deterioration (ug/m^3)—Measure of ambient air quality (concentration in atmosphere).
Visibility (Delta-E)—Indicator of plume perceptibility and atmospheric discoloration.
[2]N/A—Impacts from the mitigated reduced volume alternative would be below those shown for the mitigated project.
[3]% of yr—Represents the amount of time that Delta-E exceeds specified level for worst-case impacted observer.

Regional Haze. The proposed Project's impact on regional haze is characterized by a deciview (dv) scale analogous to the decibel index for sound. A 1-dv change is considered to be the threshold for regulatory concern about haze impacts. A 1-dv change represents about a 10 percent change in extinction coefficient, which is a small, but perceptible, scenic change.

The maximum calculated change is 0.40 dv at 50 km using winter assumptions. The results show that the maximum regional haze impact for the proposed Project is well below the threshold of 1.0 dv.

Acid Deposition. Because acid deposition contains a variety of chemical components and is deposited in multiple forms (e.g., rain, snow, fog, and as dry particles), it is difficult to determine an acceptable level or standard. Minnesota is the only state that has set an acidic deposition standard to protect sensitive aquatic and terrestrial ecosystems. The standard limits the amount of wet-deposited sulfate (SO_4) deposition to an annual total of 11 kilograms per hectare (km/ha), which would allow only tolerable amounts of acidity to be deposited in the most sensitive lakes in the state. The maximum annual SO_2 deposition rates for the proposed Project are 0.45 kg/ha for the Project without mitigation and 0.41 kg/ha for the Project with mitigation (0.68 and 0.62 kg/ha sulfate, respectively, when adjusted for molecular weight). This level is significantly lower than the level set by the State of Minnesota. Because the actual Project impacts are expected to be significantly lower than those calculated, the acid deposition impact from SO_2 is not considered to be significant.

To determine the significance criteria for nitric acid deposition, estimates for a critical load in the range of 5 to 45 kg/ha/yr were used with a value of 15 kg N/ha/yr being typical. The maximum loads calculated for JTNP are 70.5 kg HNO_3/ha/yr for the proposed Project, or 37.2 kg HNO_3/ha/yr for the mitigated Project (15.5 and 8.2 kg N/ha/yr, respectively, when corrected for molecular weight). The concatenation of several very conservative assumptions in the Level-1 analysis, however, leads to a gross overestimate of the amount of deposition, perhaps by as much as an order-of-magnitude or more (see Appendix E). If the Level-1 deposition results are reduced by an order-of-magnitude in order to correct for the conservative assumptions used in the Level-1 analysis, Project impacts (1.6 and 0.8 kg/ha/yr, respectively, for the Project without and with mitigation) are significantly lower than critical nitrogen loads established for a variety of sensitive, but generally much wetter, watersheds elsewhere in the world.

Vegetation. Ozone probably causes more plant damage in the U.S. than any other pollutant. In three of the SCAB's forest areas, San Bernardino, Angeles, and the Santa Monica Mountains, actual damage to vegetation has been attributed to ozone and combinations of ozone and sulfur dioxide. Ozone exceedances in the SCAB are a regional problem and are considered the primary cause of the ozone exceedances downwind or in eastern parts of the SCAB and the Southeast Desert Air Basin (SEDAB) due to transport. Ozone increases caused by the Project itself are not considered to be significant and will not contribute significantly to this regional transport problem.

According to a California Air Resources Board report (1991), there are only a few studies that provide information on 1-hour exposures to ambient NO_2 at 0.25 ppm. A decline in plant productivity can be detected for exposure for a day or longer to NO_2 in the range of 0.02 to 0.1 parts per million (ppm) for the most sensitive species. It does not appear that the species found in the Project area or in JTNP are the most sensitive to this pollutant. In addition, emissions from the proposed Project will result in ambient NO_x levels far below the

threshold level for damage identified by Wark and Warner (1976) (2.5 ppm or 4,700 $\mu g/m^3$ for a 4-hour exposure). Therefore, no detrimental effects from NO_2 are expected.

Sulfur dioxide pollution is also a potential concern in the area, because SO_2 might damage the leaves of some plants exposed to sufficiently high concentrations and dosage. A threshold does exist because plants exposed only to low concentrations are able to take in small amounts of SO_2 through the stomata and dispose of it without damage. Concentrations above the threshold for a particular plant cause deterioration of the internal cells and leaf discoloration. Studies conducted also found that the "main detriment of growth effects was average, not peak SO_2 concentrations." Wark and Warner (1976) suggest a threshold value of 0.3 ppm (785 ug/m^3) for a sustained 8-hour exposure, and indicate that concentrations of 0.3 to 0.5 ppm for several days can lead to chronic injury to sensitive plants. Concentrations in the SEDAB are significantly below the thresholds identified for desert species. The emissions of SO_2 from the proposed Project will not add significantly to these concentrations and, therefore, no adverse impacts will result from the proposed Project.

Visibility. Regional visibility is affected by emissions of hydrocarbons, oxides of nitrogen, sulfur dioxide, and particulate matter. A detailed analysis of the proposed Project's impacts on regional visibility is included in Appendix E. The measurement of visibility used is a Delta-E and a Contrast value. The EPA suggests the range of Delta-E between 1 and 4 (Delta-E of 2.0 corresponds to a Contrast value of 0.05) as the approximate threshold of plume perceptibility.

The results of the modeling analysis for the proposed Project without mitigation show that the maximum number of observations above a Delta-E of 4.0 was 30 and a Contrast of 0.10 was 12 for the most affected observer. This represents a maximum of 89 potential observations with a Delta-E over 2.0 for the most affected observer. The maximum number of observations with a Contrast value greater than 0.05 was 58 for the most affected observer. This represents a potential maximum observable condition for only 1 percent of the total hours per year.

The results of the modeling analysis for the proposed Project with mitigation show that there were no observations above a Delta-E of 4.0 or a Contrast of 0.10. For the proposed Project with mitigation, the maximum number of observations with a Delta-E over 2.0 was 39, whereas the observations greater than 0.05 was 29 for the most affected observer. This represents a maximum of potential observable conditions for only 0.45 percent and 0.03 percent of the total hours per year for Delta-E and Contrast, respectively.

The proposed Project, including the gas flares, would not create a noticeable change or impact in regional visibility or haze to the casual observer from locations at the closest boundaries of JTNP to the Project site. This is based upon the results of the visibility modeling (Table 4.4-7), which indicate no readings above the threshold of Delta-E of 4.0 or Contrast of 0.10 for the mitigated project. The proposed Project, at full operation, with mitigation, would create a slight discoloration in the regional visibility to only the most sensitive observer located within 4 miles of the Project site less than 0.5 percent of the time.

This impact is considered insignificant because: (1) the sensitive observer would need to be in an area of JTNP where there are no existing trails or campsites (see Section 4.11); (2) the observer would have to be at this location for some part of the 39 hours per year (0.45 percent) that this condition might occur; and (3) the background visual range would have to be at the 10 percentile or better during these 39 hours.

The National Park Service air quality experts, and experts who prepared the DEIS/EIR disagree about the conclusion that visibility is not significantly impacted. The NPS bases its belief that it is significant on the number of hours and location of impacts within Joshua Tree National Park boundaries. The analysis in the DEIS/EIR concludes it is not significant, based on the limited number of hours, time of day, and year impacts may occur, the nearby location of major developments (Townsite and prison), and because this part of the park receives very little use.

Prevention of Significant Deterioration. Although the proposed Project would not trigger PSD review, an evaluation of the impacts show that the proposed Project with mitigation would not exceed the Class I area increments for any pollutant.

Consistency with Regulatory Programs. The determination as to whether the proposed Project would be subject to Prevention of Significant Deterioration (PSD) review is based on its emissions. Based on review of the emissions and a comparison of these emissions to the PSD trigger levels, it was determined that the Project would not trigger PSD review. The federal New Source Performance Standard (NPS) for Non-Metallic Mineral Processing Plants would limit the particulate matter emissions to the onsite material processing plants. These processing plants would meet the requirements of this regulation with the use of water sprays and dust collectors. The federal Standard for Municipal Solid Waste Landfills would require the installation of a gas collection system and a system for disposing of the collected gas. The proposed Project would meet these requirements by installation of a gas collection system and would dispose of the collected gas with flares and/or an energy recovery system. The only other federal requirement that must be met is that the Project must obtain a Title V operation permit. Since the only purpose of the Title V regulation is to combine all applicable requirements from other air quality regulatory programs into a single permit, there are no additional emission limits or control technology requirements imposed by this program.

With regard to local regulatory requirements, the proposed Project would be subject to Southern California Air Quality Management District (SCAQMD) regulations. These regulations limit emissions of various pollutants from many sources, including landfill flares and other gas combustion devices. Included in these regulations are rules for fugitive dust (Rule 403) and particulate matter (Rule 404). These rules would apply to fugitive emissions from haul roads, excavation areas, and waste disposal areas and the concentration of particulate matter from landfill gas flares, emergency generators, maintenance paint shop, and the dust collector exhausts associated with material process plants and locomotive sand silo. There are also rules limiting the sulfur content of gaseous fuels (Rule 431.1) and NO_x

emissions from fuel-burning equipment (Rule 474). These regulations would apply to the landfill gas flares and emergency generators.

The Project would also be subject to the SCAQMD New Source Review rule (Regulation XIII). This rule would require a preconstruction permit for the landfill gas collection and disposal system, fuel storage and dispensing operations, maintenance paint shop, material processing plants, locomotive sand silo, and emergency generators. Each of these operations would require application of the Best Available Control Technology (BACT). Two general levels of control that would apply to the Project are (1) the use of control methods that are technologically feasible, barring a demonstration that the methods are not cost-effective, or (2) the use of control methods that have been achieved in practice or are contained in an EPA-approved State Implementation Plan, regardless of cost. An evaluation was made of the available technology, and it was determined that the Project would meet these requirements. Among the technology that would be employed is the control of NO_x from the flares to a level of 0.06 pound of NOx per million British thermal units (Btu), the use of low-VOC coatings for paint spray booths, and the use of vapor control systems for the diesel storage tanks. Daily and annual NO_x emissions for the landfill gas flares using this emission factor are shown in Table 4.4-3.

The Project would also comply with the requirements of Rule 1401 (Toxics), which requires that a health risk assessment be performed for permit units required to undergo new source review under Regulation XIII. During the initial SCAQMD permit review process for the first two landfill gas flares during 1994, a screening level risk assessment was performed and approved that indicated that the two flares would not exceed the Rule 1401 significance levels. Also included in Appendix E is a screening level risk assessment that demonstrates that all eight flares would be in compliance with Rule 1401.

Odor Impacts. Odor impacts would be considered significant if effects of the proposed Project were to noticeably change existing conditions at locations such as residential, commercial or recreational facilities.

The potential for odor sources is associated with emissions from municipal solid waste (MSW) residue containers during train transport, emissions from containers held in hot desert areas due to train delays, emissions from the landfill face, and emissions from the container washdown facility at the Project site.

Although each container used to transport MSW will be water-tight, each container has a pressure vent to allow pressure inside the container to adjust to outside air pressure. Venting through the pressure vent can be caused by increases in temperature which would cause air to expand forcing gas generated by the decomposition of MSW inside the container to the atmosphere. During the transport of MSW, it is unlikely that decomposition would be anaerobic. The decomposition would mostly be by aerobic processes that produce carbon dioxide and water vapor rather than carbon dioxide, methane, and odorous VOCs caused by the anaerobic process. It is therefore unlikely, even in the event of a 24-hour train delay, that

odors from containers would be even one-tenth of the odor thresholds. The impact would be reduced even further due to atmospheric dispersion.

For emissions from the landfill face, an analysis of the maximum impacts of odorous compounds expected for fugitive landfill gas was performed. After identifying the likely odorous substances expected in fugitive landfill gas, the maximum offsite impacts were calculated based on the maximum expected concentrations of odorous substances in landfill gas and the maximum fugitive landfill gas emission levels. The results of this analysis (Tables 4.4-8 and 4.4-9) show that the maximum offsite impacts are well below the corresponding detection thresholds for each substance analyzed. Consequently, emissions of fugitive landfill gas are not expected to cause a significant odor impact.

Table 4.4-8
Eagle Mountain Landfill and Recycling Center
Odorous Compounds—Landfill Surface

Landfill Gas Production Rate = 46,000 scfm
66.24 MMscf/day
Gas Collection Efficiency = 0.9
Fugitive Gas Release = 4,600 scfm

Contaminant	Mole Weight (lb/lb-mol)	Max. Conc.[1] (ppb)	Fugitive Landfill Emissions (lb/hr)	Fugitive Landfill Emissions (g/sec)
Dimethyl Sulfide	62	20	0.001	1.14E-04
Methyl Mercaptan	48	1,870	0.065	8.22E-03

[1]From "Air Pollution Engineering Manual," Air and Waste Management Association, 1992, page 866, Table 1 (average concentration).

Table 4.4-9
Eagle Mountain Landfill and Recycling Center
Odorous Compounds—Landfill Surface

Contaminant	Maximum[1] Unit Impact ($\mu g/m^3$/sec)	Maximum Emission Rate (g/sec)	Maximum Impact ($\mu g/m^3$)	Maximum Impact (ppmv)	Detection Threshold[2] (ppmv)
Dimethyl Sulfide	1.941	1.1E-04	0.0002	8.4E-08	1.0E-03
Methyl Mercaptan	1.941	8.2E-03	0.0160	7.9E-06	5.0E-04

[1]Maximum modeled impact for a 1 g/sec unit emission rate for landfill surface.
[2]From "Air Pollution Engineering Manual," Air and Waste Management Association, 1992, page 148, Table 1.

Mitigation. Mitigation measures include regulatory actions by other agencies that are reasonably foreseeable, or that have future effective dates, as well as measures that can be implemented by the applicant. Mitigation measures recommended for the Project are shown in Table 4.4-10. Mitigation measures are organized in Table 4.4-10 into two groups (i.e., existing requirements and additional measures). The existing requirements include Project mitigation required by existing regulatory measures. Emission estimates for the proposed Project with and without mitigation reflect the reductions associated with these measures. The additional measures are control techniques proposed for the Project that go beyond those measures required by existing regulations.

Exhaust emissions from diesel engines used in landfill and waste-handling equipment at the Project site will also contribute to the environmental impact of the Project. Measures that

could be taken include operational measures such as limiting the time spent with the engine idling by shutting down equipment when not in use; regular preventive maintenance to prevent emission increases due to engine problems; the purchase and use of turbocharged and intercooled diesel engines, when available, with retarded injection timing; and the use of low-emitting diesel engines meeting California emission standards for highway trucks.

Table 4.4-10
Mitigation Measures Recommended for Project Approval

Operation	Measure
Measures to Meet Existing Requirements	
Trucks Hauling Waste	Comply with all applicable CA motor vehicle regulations
Diesel Fuel Quality	Trucks use diesel fuel that meets CA on-road regulations
Smoke Enforcement	Trucks periodically checked for excessive smoke
Truck Inspection	Periodic checks by Highway Patrol for excessive smoke and tampering
Landfill Diesels	All diesel-fueled equipment comply with CA on-road regulations
Construction Equipment	Purchase landfill equipment that meets state and federal emission controls
Flare Emissions	Conduct feasibility study of recovering energy from landfill gas
Temporary Roads	Apply water and chemical dust suppressants
Haul Roads	Apply chemical dust suppressants on base of compacted crushed rock
Permanent Nonhaul Roads	Pave all onsite roads and periodically clean with sweepers or water flush
Excavation	Prewater tailing and overburden piles prior to excavation
Misc. Fugitive Dust	Apply water as a dust suppressant prior to clearing material or other activity
Wind Erosion	Compact and apply chemical dust suppressant to or cover construction areas
Offsite Paved Roads	Trucks to pass through onsite wheel-washing station/maintain 2-foot freeboard
Material Processing	Equip plants with water sprays and/or vent to dust collectors
Additional Measures	
Locomotive Operations	Shut down engines when not needed for 1 hour or more
Railway Locomotives	Locomotives use diesel fuel that meets CA on-road regulations
Locomotive Diesels	New diesel locomotive engines to comply with all state and federal regulations
Locomotive Diesels	Remanufacture all existing engines to comply with future EPA regulations
Locomotive Diesels	Study technical feasibility of alternative fuels
Railway Electrification	Study cost-effectiveness of electrifying the Eagle Mountain Railway
Landfill Equipment	Shut down equipment if idle for 15 minutes or longer
Landfill Diesels	Evaluate feasibility of purchasing engines that meet CA and EPA standards
Landfill Diesels	Purchase low-NOx engines for equipment that is not suitable for on-road use
Landfill Equipment	Purchase and operate electric versions of landfill equipment when feasible
Air Quality Monitoring	Install and operate fine particulate and gaseous pollutant monitoring system

If the landfill gas generation rates reach levels where an energy recovery facility becomes feasible, the proposed Project may replace or supplement the flare system with a gas turbine power plant, gas treatment compression facility, or gas treatment liquefication facility. If and when this occurs, the gas turbine would be equipped with BACT, which would include a selective catalytic reduction (SCR) unit (or the equivalent) to control NO_x emissions and an oxidation catalyst to control CO and reactive organic gas (ROG) emissions. If a gas compression facility were selected, the landfill gas captured by the landfill gas collection system would be piped to the facility for cleaning and compression. The treated compressed landfill gas could be used onsite for alternative fuel-fired equipment, with surplus gas being piped to the local gas utility distribution system.

The emissions, after applying the mitigation measures discussed above, are shown in Table 4.4-11. The data show that the mitigation measures have the greatest benefits in reducing emissions of NO_x and SO_2.

Table 4.4-11
Eagle Mountain Landfill and Recycling Center
Total Project Emissions, Proposed Project With Mitigation

Activity	(lb/day)					(tons/yr)				
	NO_x	CO	PM_{10}	VOC	SO_2	NO_x	CO	PM_{10}	VOC	SO_2
Offsite Sources										
Trains	3,377	1,170	206	342	157	616	214	38	62	29
On-Highway Trucks	940	451	127	94	26	172	82	23	17	5
Subtotal, Offsite	**4,317**	**1,621**	**333**	**436**	**183**	**788**	**296**	**61**	**79**	**34**
Onsite Sources										
Trains	104	50	5	14	4	19	9	1	2	1
On-Highway Trucks	3	3	0	0	0	1	0	0	0	0
Townsite	98	1,022	8	83	8	18	187	2	15	1
Onsite Vehicle Exhaust	1,237	764	106	156	95	226	139	19	29	17
Onsite Fugitive Dust	--	--	560	--	--	--	--	102	--	--
Landfill Gas Flares	1,264	903	803	368	468	231	165	147	67	85
Fugitive Landfill Gas	--	--	--	311	--	--	--	--	57	--
Maintenance Shop	--	--	0	12	--	--	--	0	2	--
Emergency Generators	4	29	0	0	0	0	1	0	0	0
Fuel Storage Tanks	--	--	--	2	--	--	--	--	0	--
Leachate/Condensate Tanks	--	--	--	0	--	--	--	--	0	--
Locomotive Sand Silo	--	--	0	--	--	--	--	0	--	--
Subtotal, Onsite	**2,710**	**2,771**	**1,483**	**948**	**575**	**494**	**501**	**271**	**173**	**105**
Project Total	**7,027**	**4,392**	**1,816**	**1,384**	**758**	**1,282**	**797**	**332**	**252**	**139**

The resultant air quality impacts are shown in Table 4.4-12. These impacts show a reduction in NO_x and SO_2 concentrations. As with the unmitigated impacts, the Project is expected to exacerbate existing violations of the state and federal 24-hour PM_{10} standard. As discussed previously, the air quality impact analysis reflects a high degree of conservatism.

Significance After Mitigation. Based on the significance criteria discussed in Section 4.1, many of the emission- and concentration-based significance thresholds are exceeded by the proposed Project for all of the criteria pollutants. Based on these criteria, the proposed Project would be expected to have a significant effect on air quality. However, several alternatives to the proposed Project are discussed in the alternatives section of the air quality impacts analysis. As a result of some of these alternatives, the proposed Project could result in lower emission levels in the South Coast Air Basin (SCAB) for all pollutants at the expense of increased impacts in desert areas. The improvements in the SCAB would result in fewer impacts on air quality from the transport of pollutants over the San Gorgonio Pass; however, these benefits would not be sufficient to outweigh the direct adverse impacts on the desert.

Table 4.4-12
Eagle Mountain Landfill and Recycling Center
Ambient Air Quality Impacts, Proposed Project With Mitigation

Pollutant/ Averaging Time	California Standards	National Standards	EPA Class II ($\mu g/m^3$)	Modeled Ambient Impact ($\mu g/m^3$)	Ambient Background Levels[1] ($\mu g/m^3$)	Combined Levels ($\mu g/m^3$)
NOx						
1-hour	470	--	--	266	75	341
Annual	--	100	25	14	6	20
SO_2						
1-hour	655	--	--	35	213	248
3-hour	--	1,300	512	34	--	--
24-hour	105	365	91	11	34	45
Annual	--	80	20	1	11	12
CO						
1-hour	23,000	40,000	--	1,761	10,354	12,115
8-hour	10,000	10,000	--	655	4,304	4,959
PM_{10}						
24-hour	50	150	30	35	210	245
Annual	30	50	17	5	22	27

[1]For NOx, CO, and PM_{10}, maximum levels monitored at the Project site. Because ambient SO_x levels were not measured at the Project site, background SO_x levels are the maximum monitored within the SEDAB.
[2]The maximum allowable Class II PM_{10} increment may be exceeded during one 24-hour period at any one location. For the Project with mitigation measures, the Class II increment was not exceeded more than once at any location.

4.4.2.2 No Action Alternative

Impacts. The emissions and impacts of the No Action Alternative are analyzed in detail in Part 6 of Appendix E. For purposes of the analysis, the following assumptions were made to project emissions for the No Action Alternative.

- Southern California's landfill needs would continue to be met through the use of existing and additional capacity within Southern California landfills.
- Truck traffic associated with residential and commercial waste pickups would be identical to that associated with the proposed Project.
- There would be a slight increase in truck traffic to recycling and transfer stations, and/or landfills, based on the estimates of the needs for replacement and expanded landfill capacity.
- There would be no rail hauling of waste to the site.
- Landfill gas generation would be the same as if disposed at other landfills.

Due to the large number of existing landfill sites, it is not reasonably possible to estimate ambient conditions at these sites. Impacts may be higher or lower than those estimated for the proposed Project depending on local geography and weather patterns. The emission

levels from the project, however, are compared at the end of this section with other alternatives.

Mitigation. The measures used to control emissions for the proposed Project without mitigation (Part 4 of Appendix E) would also be expected to apply to the No Action Alternative, with the exception of the following measures:

- Rather than assume the use of all new onsite landfill equipment as with the proposed Project without mitigation, for the No Action Alternative it is assumed that an average fleet of landfill equipment will be used.

- Rather than assume the use of new landfill gas flares equipped with urea injection and oxidation catalysts as with the proposed Project without mitigation, for the No Action Alternative it is assumed that flares meeting average emission levels will be used.

Significance After Mitigation. Because emission levels associated with the No Action Alternative are of the same magnitude as the onsite emissions estimated for the proposed Project, the No Action Alternative is expected to have a significant effect on air quality.

4.4.2.3 Reduced Volume of Onsite Disposal Alternative

Impacts. Under this alternative, solid waste would be transported to the landfill by the same two modes as the proposed Project (trains and trucks). The configurations of trains and trucks would be the same as with the proposed Project. Train deliveries would be reduced from 18,000 to 14,000 tons per day, but the truck deliveries would remain unchanged at 2,000 trucks per day. Thus, locomotive fuel use and emissions would be 77.8 percent of the proposed Project. Truck emissions would be unchanged from the proposed Project.

The impacts associated with onsite material handling, landfill gas generation and combustion, fugitive dust, and miscellaneous sources would be similarly reduced. Part 5 of Appendix E analyzes the expected impacts in detail. These impacts are summarized on a comparative basis with the proposed Project at the end of this section.

Compared to the proposed Project, the Reduced Volume Alternative results in a 16 percent reduction of "greenhouse" gas emissions for the operation of the landfill equipment. Overall, the Reduced Volume of Onsite Disposal Alternative would result in the generation of gases, which could contribute to global warming. The state of knowledge regarding global warming, however, is not adequate to allow an assessment of the impacts of any individual project at the present time.

Mitigation. The mitigation measures recommended for the proposed Project are also recommended for the Reduced Volume of Onsite Disposal Alternative. These measures are listed in Section 4.4.2.1.

Significance After Mitigation. Based on the analyses in Appendix E, the Reduced Volume of Onsite Disposal Alternative is expected to have a significant effect on air quality. However, this alternative could result in lower emission levels in the SCAB for all pollutants, at the expense of increased impacts in desert areas. The improvements in the SCAB would pass through to the desert areas over the San Gorgonio Pass; however, these benefits would not be sufficient to outweigh the direct adverse impacts in the desert.

4.4.2.4 Alternate Road Access Alternative

Impacts. Emissions for the Alternate Road Access Alternative would be associated with the same activities as for the proposed Project. These activities include the rail hauling of waste to the site, landfill gas flares, mobile equipment operations, and truck traffic. Because the truck haul distance is increased with the Alternate Road Access, waste haul emissions would increase compared to the proposed Project. The impacts are analyzed in detail in Appendix E and compared to the other alternatives at the end of this section.

Mitigation. The mitigation measures recommended for the Alternate Road Access Alternative are the same as for the proposed Project. These measures are listed in Section 4.4.2.1.

Significance After Mitigation. Based on the analyses contained in Appendix E, the Alternative Road Access Alternative is expected to have a significant effect on air quality, and slightly greater than the proposed Project because of the increased haul distance.

4.4.2.5 Rail Access Only Alternative

Impacts. For the Rail Access Only Alternative, at maximum operating levels, 18,000 tons per day of waste would be transported to the landfill by rail. There would be no truck hauling, and therefore emissions would be slightly reduced in the vicinity of the proposed landfill. These impacts are discussed in more detail in Appendix E, and compared to other alternatives at the end of this section.

Mitigation. The same mitigation measures discussed for the proposed Project would apply, with the exception of those measures directed towards on-highway trucks. These measures are summarized in Section 4.4.4.2 and in Appendix E.

Significance After Mitigation. Based on the analyses in Appendix E, the Rail Access Only Alternative is expected to have significant effects on air quality. This alternative would, however, result in lower emissions in the immediate vicinity of the landfill, though these potentially would be offset by hauling distances to other landfills.

4.4.2.6 Landfill on Kaiser Land Only Alternative

Impacts. For this alternative, the landfill would include Kaiser-owned lands in and around the East Pit. Emissions would be less than those associated with the Reduced Volume of

Onsite Disposal Alternative because at maximum operating levels, 10,000 tons of waste would be transported to the site. These impacts are discussed in more detail in Appendix E, and compared to the other alternatives at the end of this section.

Mitigation. Mitigation measures would be the same as with the proposed Project. These measures are summarized in Section 4.4.2.1, and in Appendix E.

Significance After Mitigation. Based on the analyses in Appendix E, this alternative would be expected to have a significant impact on air quality. The difference would be that, because the landfill capacity is reduced, maximum impacts would cease sooner.

4.4.2.7 Landfill Development/No Townsite Development

Impacts. This alternative is identical to the proposed Project except that the proposed Townsite is not developed. Under this alternative, it is assumed that the employees at the landfill would commute to the site from local communities such as Desert Center and Blythe. The emissions associated with travel to and from these communities are shown in Tables 5-29 and 5-30 in Part 5 of Appendix E. The emissions are compared to the other alternatives at the end of this section.

Mitigation. The proposed mitigation measures are identical to the proposed Project, and are listed in Section 4.4.2.1.

Significance After Mitigation. Based on the analyses in Appendix E, this alternative would be expected to have a significant impact on air quality. The difference would be that emissions would be slightly increased due to the increased travel distance for employees.

4.4.3 Comparison of Alternatives

To compare the various alternatives, the emissions from each alternative were divided into the air basins impacted by the projects. A comparison was made for each pollutant and is shown in Figures 4.4-1 (NO_x), 4.4-2 (CO), 4.4-3 (PM_{10}), 4.4-4 (VOC), and 4.4-5 (SO_2).

With respect to oxides of nitrogen, Figure 4.4-1 shows that NO_x emissions in the SCAB would be reduced under all of the alternatives compared with the No Action Alternative since the flare and onsite vehicle emissions associated with the No Action Alternative exceed the rail emissions associated with the proposed Project and other alternatives. The principal increase in NO_x emissions from the proposed Project and all alternatives, with the exception of the No Project Alternative, is in the SEDAB (i.e., County of Riverside [offsite] and the Eagle Mountain area).

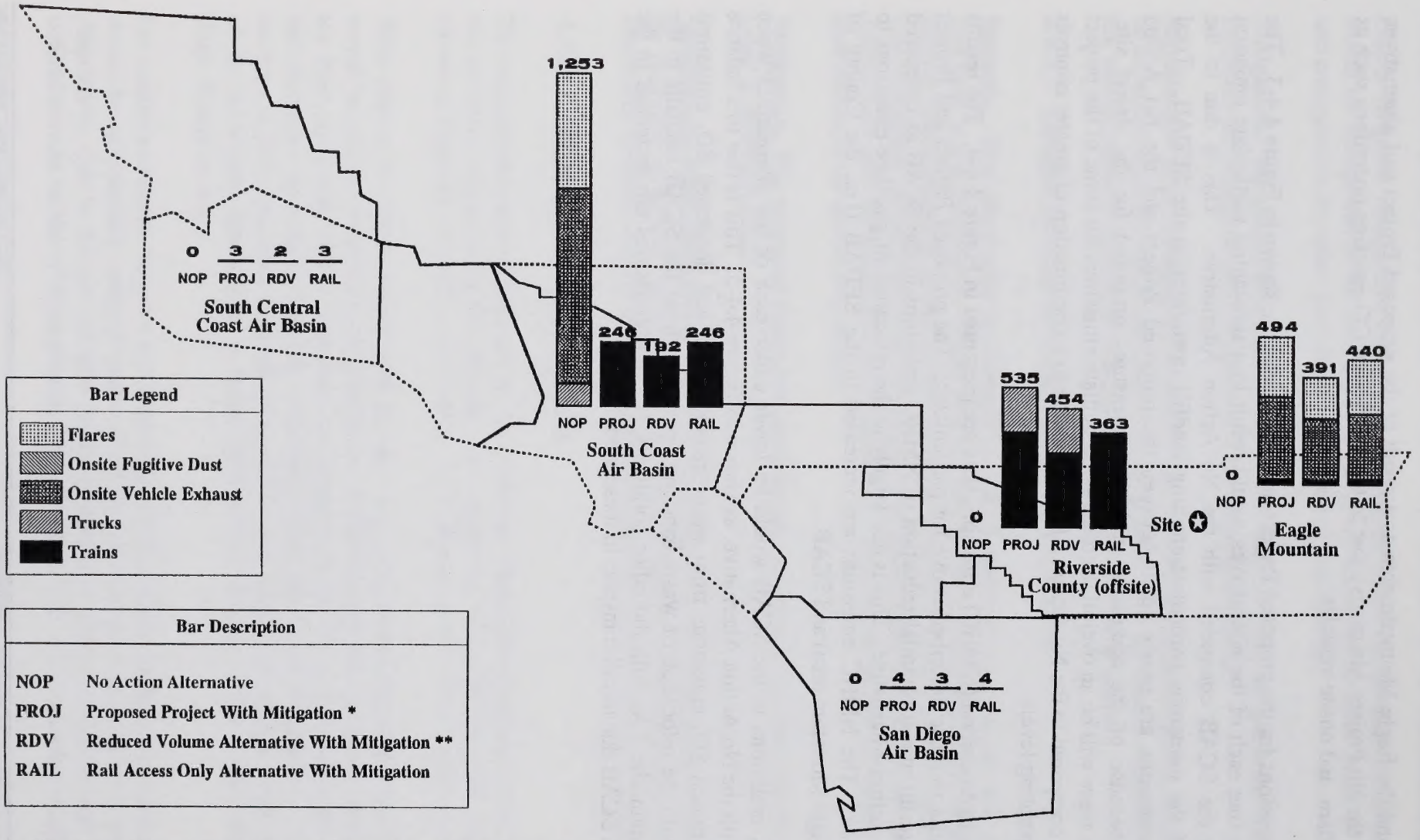
For carbon monoxide, Figure 4.4-2 shows that CO emissions, both in total and in the SCAB, would be substantially reduced under all of the alternatives compared with the No Action Alternative, due to the use of new flares (combustion systems) and the use of advanced control devices on the systems proposed for the desert site. CO emissions would increase in

the County and the Eagle Mountain area as a result of the proposed Project and alternatives compared to the No Project Alternative due to the addition of CO-emitting operations such as train, truck, flare, and onsite vehicles.

The PM_{10} emissions for the proposed Project and alternatives are shown in Figure 4.4-3. The data indicate that each of the alternatives would result in a substantial particulate emission reduction in the SCAB compared with the No Action Alternative. This is due to the relocation of the numerous particulate-emitting landfill operations to the SEDAB. Total particulate emissions are nearly equal between the proposed Project and the No Action Alternative because of the additional mitigation measures proposed for the desert site. Furthermore, there will be an overall decrease in particulate emissions for some of the project alternatives, compared to the No Action Alternative, due to a combination of greater controls and lower operating levels.

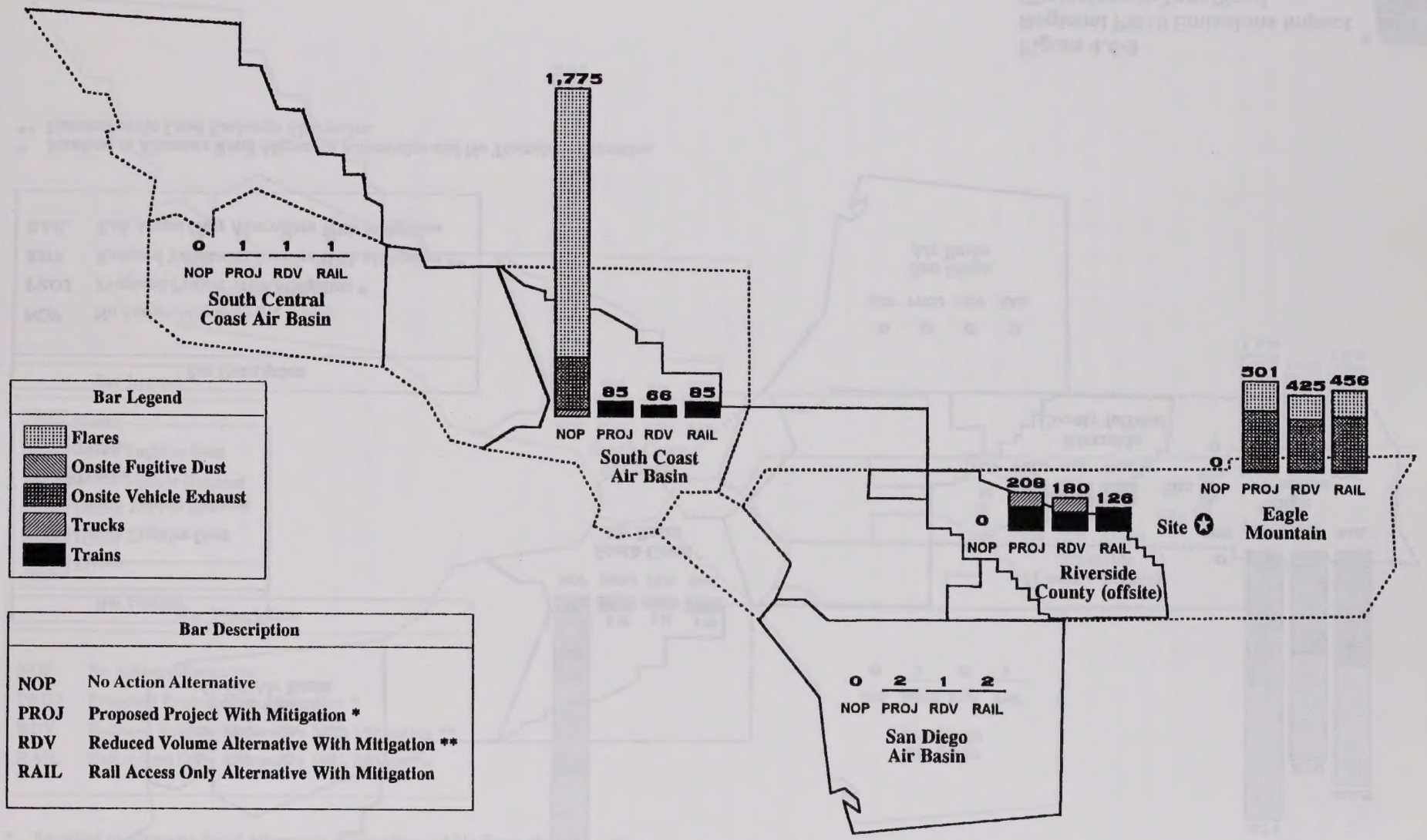
Nonmethane hydrocarbon (NMHC) emissions data are presented in Figure 4.4-4. The results here are similar to those described above for particulates. The proposed Project and Project alternatives result in a substantial reduction of NMHC emissions in the SCAB as compared with the No Action Alternative. This is due largely to the relocation of gas flare emissions to the desert site. The NMHC emissions are increased in the SEDAB (i.e., the County of Riverside/Eagle Mountain area) and SCAB.

Finally, SO_x emissions in the SCAB would be lower under each of the alternatives when compared with the No Action Alternative, as shown in Figure 4.4-5. This is due to a balance between increased SO_x emissions from waste transportation, and decreased SO_x emissions associated with the relocation of waste handling operations from the SCAB landfills to the Eagle Mountain site. As with the other pollutants, the SO_x emissions are increased in the SEDAB and SCAB due to rail transport in these areas.



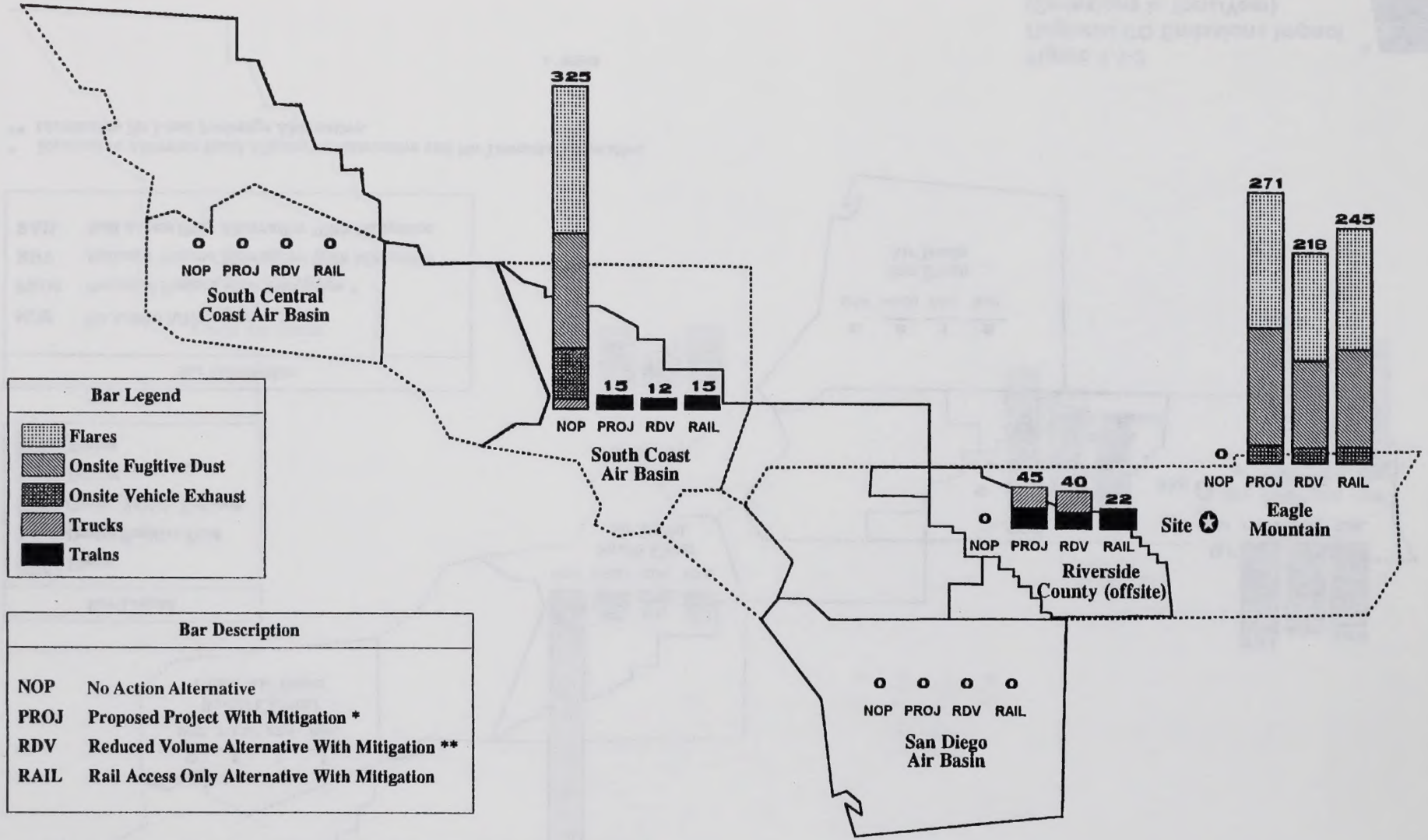
* Identical to Alternate Road Alignment Alternative and No Townsite Alternative.
** Identical to No Land Exchange Alternative.

Figure 4.4-1
Regional NOx Emissions Impact (Emissions in Tons/Year)
Eagle Mountain Landfill and Recycling Center EIS/EIR



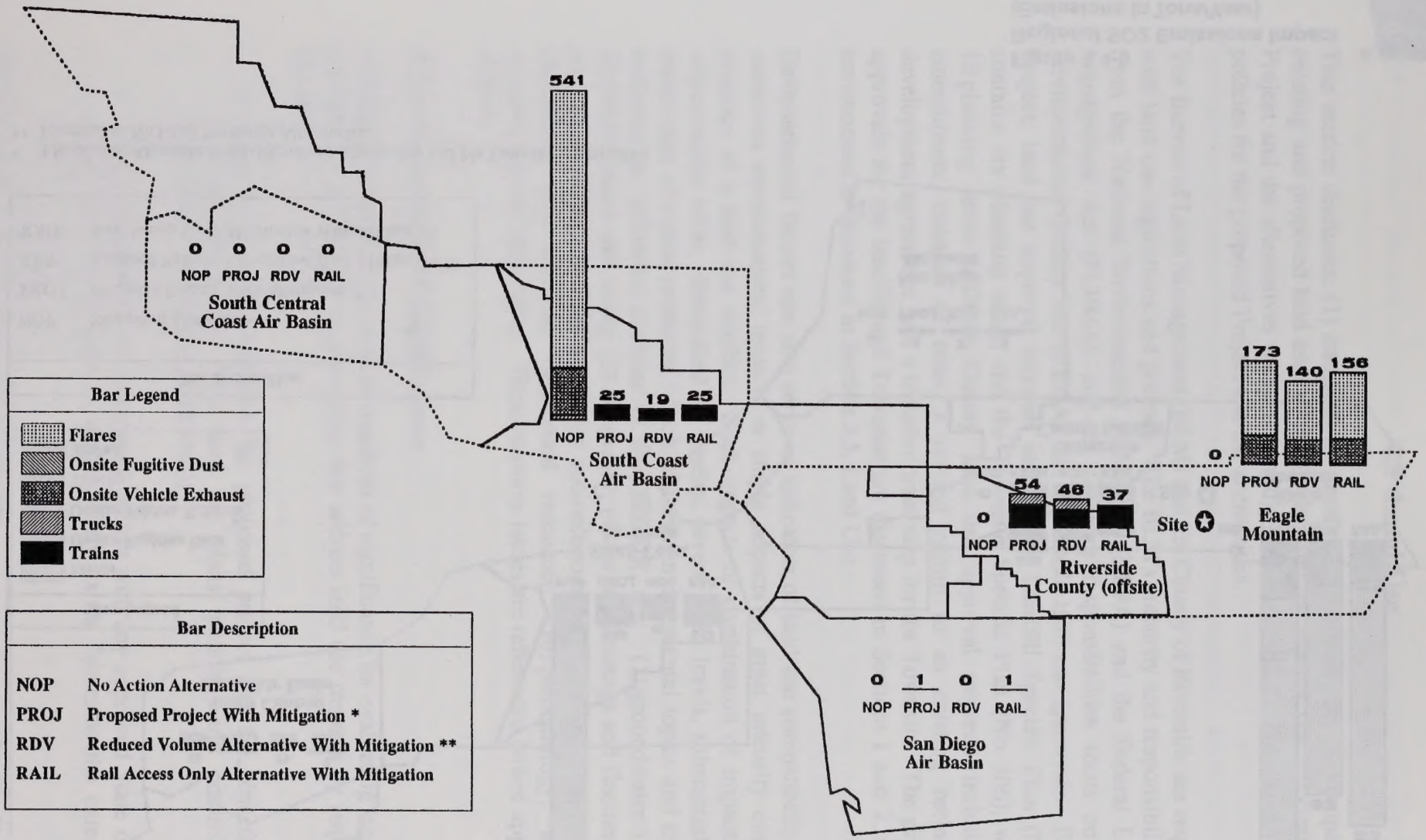
* Identical to Alternate Road Alignment Alternative and No Townsite Alternative.
** Identical to No Land Exchange Alternative.

Figure 4.4-2
Regional CO Emissions Impact (Emissions in Tons/Year)
Eagle Mountain Landfill and Recycling Center EIS/EIR



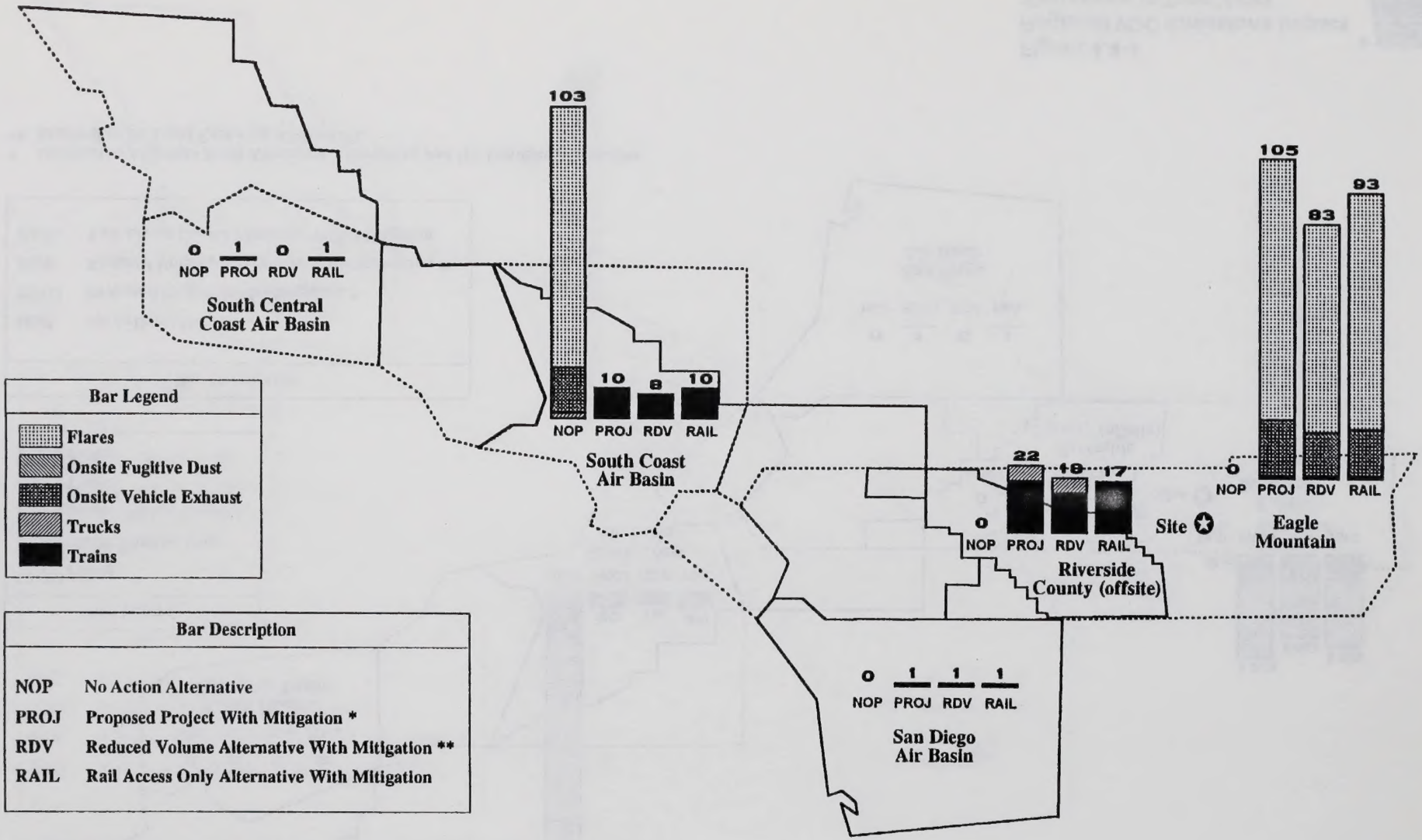
* Identical to Alternate Road Alignment Alternative and No Townsite Alternative.
** Identical to No Land Exchange Alternative.

Figure 4.4-3
Regional PM10 Emissions Impact (Emissions in Tons/Year)
Eagle Mountain Landfill and Recycling Center EIS/EIR



* Identical to Alternate Road Alignment Alternative and No Townsite Alternative.
** Identical to No Land Exchange Alternative.

Figure 4.4-4
Regional VOC Emissions Impact (Emissions in Tons/Year)
Eagle Mountain Landfill and Recycling Center EIS/EIR



* Identical to Alternate Road Alignment Alternative and No Townsite Alternative.
** Identical to No Land Exchange Alternative.

Figure 4.4-5
Regional SO2 Emissions Impact (Emissions in Tons/Year)
Eagle Mountain Landfill and Recycling Center EIS/EIR

4.5 Land Use

This section discusses: (1) standards of significance for land use; (2) compatibility between existing and proposed land uses of the Project and the alternatives; (3) compatibility of the Project and the alternatives with surrounding land uses; and (4) consistency with plans and policies for the proposed Project and the alternatives.

The Bureau of Land Management (BLM) and the County of Riverside are required to comply with land use regulations and policies. The BLM's authority and responsibilities are derived from the National Environmental Policy Act (NEPA) and the Federal Land Policy and Management Act (FLPMA), and the County's responsibilities focus on the California Environmental Quality Act (CEQA) and applicable land use approvals. For the proposed Project, land use approval requests include the Landfill Specific Plan (No. 305), which contains six planning areas, and the Townsite Specific Plan (No. 306), which comprises 12 planning areas. Other County land use approval requests include general plan amendments, changes of zone, a revised permit to an existing reclamation plan, a development agreement, and a tentative tract map for the Townsite. The proposed land use approvals for the landfill and Townsite are discussed in Sections 1 and 2, and the affected environment is discussed in Section 3.5, Land Use.

Environmental factors can also serve as indicators of land use compatibility. For example, numerous environmental impacts or single impacts of great intensity could indicate the presence of a land use conflict. Such impacts or combination of impacts might include objectionable odors, diminished air quality, severe noise levels, substantial new traffic, or obstruction of visual resources. Each of these environmental topics and others, which are evaluated in individual sections of this EIS/EIR, are: (1) groundwater use and quality; (2) public health and safety; (3) air quality; (4) surface drainage and flooding; (5) biological resources; (6) growth inducement and socioeconomics; (7) geology and mineral resources; (8) utilities and services; (9) cultural resources; (10) paleontology; and (11) energy consumption and generation. These resource issues are referenced (when appropriate) in this section.

4.5.1 Standards of Significance

Although NEPA does not provide standards of significance for evaluating land use impacts, it contains the following two provisions that address land use impacts by requiring an EIS to discuss:

- "Possible conflicts between the proposed project and the objectives of Federal, regional, State, and local land use plans, policies, and controls for the area concerned." [40 CFR § 1502.16(c)]

- "Any inconsistency of a proposed project with any approved State or local plan and laws" and, where such an inconsistency exists, "describe the extent to which the

agency would reconcile its proposed project with the plan or law." [40 CFR § 1506.2(d)]

The CEQA Guidelines (Appendix G) state that a project will normally have a significant effect on the environment if it will:

- Conflict with adopted environmental plans and goals of the community where it is located
- Disrupt or divide the physical arrangement of an established community
- Convert prime agricultural land to nonagricultural use or impair the agricultural productivity of prime agricultural land

This section also determines standards of significance by evaluating the potential for conflicts among proposed uses within the Project site and any conflicts between the Project and surrounding land uses.

- Impacts to land use would be considered significant if the proposed Project presents numerous conflicts or highly intensive conflicts between existing or planned land uses within the Project site or in the vicinity of the Project site.
- Impacts to land use would also be considered significant if the proposed Project conflicts with existing plans and/or applicable and established goals, objectives, or policies of the County of Riverside (County), the BLM, the National Park Service (NPS), or the Metropolitan Water District of Southern California (MWD).

4.5.2 Compatibility of the Project with Existing and Proposed Land Uses Within the Project Site

4.5.2.1 Proposed Action

Impacts. Land use concerns relating to the compatibility of various land uses within the areas addressed by the Specific Plans for the landfill and the Townsite are discussed below. A discussion of prior uses of the Project site is compared with uses proposed for the Project by planning area. The planning areas are shown in Figures 2-7 (for the Townsite) and 2-8 (for the landfill).

Landfill. The footprint of the proposed landfill (i.e., Planning Area 1, which comprises approximately 2,164 acres) consists of substantially disturbed land from prior mining activities and intermittent canyon areas that are largely undisturbed. The landfill footprint is proposed to be used as the area for disposal of solid waste.

As discussed in more detail in Section 2.6, Kaiser currently has fee ownership of all of the lands located within Section 36 of Township 3S, Range 14E (covering portions of Phases 4

and 5 [the last two phases] of the landfill development plan), with the exception of an inholding of approximately 20 acres, which is currently under federal ownership and administered by the BLM. This inholding parcel is covered by a mining claim held by Kaiser and is included in the selected lands proposed to be conveyed by the BLM to Kaiser as part of the land exchange. The State of California holds a reservation of all mineral deposits within lands previously acquired by Kaiser from the State in Section 36 and Kaiser, in turn, has a mineral lease from the State covering all iron ore deposits within such lands. That lease will expire on December 31, 2002 unless further extended. Other lands in Section 36 are patented mining claims fully owned by Kaiser in fee.

The roads associated with prior mining activities will be used as circulation routes within the proposed Landfill Specific Plan. The mine's formerly active ore processing areas (235 acres) are proposed to be used as the Rail Yard I container handling area (i.e., Landfill Planning Area 2, the truck marshaling and intermodal rail yards) for the landfill portion of the Project site. This area will serve as the primary container handling area until waste inflow exceeds 10,000 tons per day. Existing structures and associated facilities in this area (including a warehouse, laboratory, office and runoff detention area) will be renovated for the repair and maintenance of the landfill equipment and rolling stock.

Landfill Planning Area 3 (461 acres), east of the proposed landfill footprint and north of some fine tailings ponds from past mining activities, is proposed to be used as the Rail Yard II expansion area for the container handling activities. Support facilities in this area include equipment and vehicle repair, fueling, and washing, as well as administrative offices.

Landfill Planning Area 4 consists of the fine tailings ponds (146 acres) from past mining activities, and is surrounded by earthen berms up to 90 feet high. This area is proposed to provide storage for equipment and recyclable material containers. This area will also contain the extension of Eagle Mountain Road and Eagle Mountain Railroad to serve the Rail Yard II container handling yards.

Landfill Planning Area 5 (516 acres), located at the southern boundary of the landfill portion of the Project site, consists of existing coarse tailings and fine tailings from prior mining activities. The coarse tailings stockpile, approximately 350 feet to 500 feet high, is proposed for use as landfill construction material. The fine tailings material contained in dried basins is proposed for use in constructing the landfill liner.

The remaining lands in Planning Area 6 (1,132 acres) surrounding the landfill operational areas are undeveloped and undisturbed natural open space areas (i.e., where no mining has occurred). These areas are proposed to serve as open space with drainage and roadway improvements between the landfill and adjacent northern and western mountains. As discussed in the specific plan for the landfill, no other development is proposed for these areas.

Although there are no plans for active mining at the landfill site, and mining is not a part of the proposed Project, there are existing iron resources at the Project site. Impacts of the landfill on mineral extraction are addressed as a potential land use compatibility issue. Those portions of the landfill site that have been affected by prior mining activities would be filled with solid waste phased over approximately 100 years beginning with those in the western portion of Planning Area 1. The majority of undisturbed areas along the northern and southern perimeter of the proposed landfill footprint would be preserved as open space and thus not physically excluded from the potential of future mining. Additional deposits exist in the central and eastern portions of Planning Area 1 near the East Pit (see Section 3.9). Future mining could be accommodated in this area for many years because the planned landfill development would be accomplished in phases moving from west to east, thus resulting in landfilling of the East Pit only during the final phase of the landfill portion of the Project. The final phase is anticipated to occur after the 78th year of landfill operations. The landfill would not affect the future mining potential of the Black Eagle Pits located to the west because: (1) haul road alignments would be retained within the landfill to maintain westerly access to these resources; (2) the retention of rail facilities, which could be used for ore shipment, is incorporated into the Project design; and (3) although Rail Yard I would be located on land previously occupied by ore processing equipment, there is adequate land within the boundary of the specific plan of the landfill for the reconstruction of this type of equipment. Additional discussion of mineral resources impacts is contained in Section 4.9 of this EIS/EIR.

The proposed land uses required for operation of the landfill are not expected to have significant impacts because they are all industrial in nature and are interrelated for efficient operation of the facility. The use of equipment and facilities, such as rail lines, maintenance buildings, and haul roads from the previous mining activity, is compatible with those uses proposed for the landfill. Only lands substantially disturbed by prior mining activities and intermittent natural lands would be affected by the proposed landfill. Undisturbed open space at the perimeter of the landfill footprint, which is contiguous with the natural mountains surrounding the Project, would remain in a natural condition. Based on the uses described in the Landfill Specific Plan, no internally incompatible land uses would occur within the landfill portion of the Project site.

Townsite. In addition to the landfill, the proposed Project provides for the repopulation of the existing Townsite, which is located just south of the Eagle Mountain Mine. The Townsite, which occupies approximately 429 acres, originally provided housing for employees of the iron-ore mine during active operations. Presently, occupied units that serve as housing for employees of the correctional facility and Kaiser are located within the Townsite. These existing residential uses in the Townsite are proposed to remain. The proposed Project also includes the renovation of existing dwelling units and, if the need arises, new homes for employees of the landfill could be constructed. Existing nonresidential uses in the Townsite (including the laundromat, community correctional facility, and Kaiser administrative offices) would continue to operate under the proposed Project and be compatible with other commercial land uses proposed in the Specific Plan. The existing and proposed uses for the Townsite are discussed below. (Also see Chapter 2 and Figure 2-7.)

The Townsite Specific Plan Planning Areas 1 (13.01 acres), 2 (12.95 acres), 4 (9.09 acres), and 5 (7.78 acres) would be designated for commercial and manufacturing uses. Existing uses include the Eagle Mountain Correctional Facility in Planning Area 1; the Kaiser Administrative Office, a laundromat, a fire station, and one vacant building in Planning Area 2; the former Elementary School and movie theater in Planning Area 4; and a community building in Planning Area 5. The existing correctional facility in Planning Area 1 and potential commercial/manufacturing uses in Planning Area 2 would be separated from residential uses by a landscape buffer and natural drainage and slope along the western edge of Planning Area 12. Planning Area 4 is separated from residential use by a minor street and landscape buffer on the west and by Sage Palm Drive, which includes a median island on the south. Potential commercial/manufacturing uses proposed in Planning Area 5 would be buffered from residential uses in Planning Areas 10 (90.95 acres), 6 (4.71 acres), and 9 (29.13 acres) by peripheral streets. The existing correctional facility in Planning Area 1 has been operating under Planned Use Permit (PUP) No. 585 since it was originally approved by the County Board of Supervisors in 1986. The Eagle Mountain Community Correctional Facility approved under PUP 585 has been amended to increase maximum inmate population to 500 and has been operating successfully since that time. The PUP approval is subject to periodic renewals by the County that allow ongoing review of the effectiveness of facility operations and compliance with required conditions of approval. The correctional facility is also under the purview of the California Department of Corrections (CDC), with uniformed CDC officers on duty at all times, thus ensuring the implementation of appropriate security measures. No significant incidents involving inmates have occurred over the life of the existing correctional facility, demonstrating the effectiveness of these security measures and management practices in place.

Similar correctional facilities are also recognized as potential uses in Planning Areas 2, 3, and 4, subject to a PUP approval. The PUP process ensures consideration of all applicable codes, ordinances, and recommendations of responsible agencies including the County of Riverside and the CDC. As with the existing correctional facility, PUP approvals would control the type of inmates, number of inmates, security measures, visiting hours, exterior noise levels, and other occupancy and use restrictions. Planning Area 4 would allow up to 280 inmates, and up to 1,000 inmates could be distributed between Planning Areas 2 and 3, depending upon final site design and subject to the PUP process. County discretionary actions, such as PUPs, also include compliance with all CEQA Guidelines that require preparation of an Environmental Assessment and Initial Study Checklist. This subsequent review would consider all potential environmental impacts associated with each project as it is proposed. These facilities would be buffered from residential uses as discussed above under the potential commercial/manufacturing compatibility discussion. In addition, all security measures such as security fencing topped with razor wire and perimeter cameras with motion sensors would be incorporated into the project as required by the CDC.

Planning Area 3 (27.82 acres), which was previously a mobile home park, is proposed as an outdoor storage area that would be compatible with the proposed commercial and manufacturing land use designation to the north and the open space use to the east and south

within Planning Area 12 (181.7 acres). Correctional facilities are also allowable in Planning Area 3, subject to the approvals and security measures discussed above. Because no residential or other incompatible uses are proposed in planning areas adjacent to Planning Area 3, there will be no significant land use compatibility impacts.

Planning Area 7 (4.16 acres) is a small parcel with an existing structure that would be retained as a community center, along with religious services. The remainder of the parcel would be used as a community park. These uses would be compatible with the existing school site, which is owned by the Desert Center Unified School District to the east of the Townsite and the surrounding single-family dwelling units. Planning Area 8 (11.36 acres) is a small strip in the northeast corner of the Townsite. It is bordered by Kaiser Road and Yucca Drive, which would be landscaped using buffers on both sides of the roadway and on the western border of the planning area, leaving approximately 5 acres available for commercial development. This would be buffered from residential uses to the west. Existing school buildings are about 500 feet to the south and separated by Yucca Drive.

Impacts for compatibility in Planning Areas 6, 9 and 10 are not considered significant because existing uses would not change. Planning Areas 6, 9, and 10 will contain all the existing and proposed residential uses. Planning Area 10 is the largest (90.95 acres), with a potential total of 335 residential dwelling units. Most of Planning Area 10 is adjacent to open space uses in Planning Area 12 to the south and west. Planning Area 9 is buffered from surrounding uses by Eagle Mountain Road and by proposed landscaped corridors on the north and south perimeters of the Planning Area. The commercial area to the east contains a landscape buffer adjacent to Planning Area 9. Planning Area 6 would be surrounded by other residential units, with the exception of Planning Area 5 to the north, which is proposed for Commercial and Manufacturing. This area is separated by Elm Street.

Planning Area 11 (35.7 acres), containing the existing wastewater treatment facility, is surrounded by Planning Area 12 (181.7 acres), planned as permanent open space. This adjacent open space use is compatible to the open character of the settling ponds. The nearest residential structures are located approximately 1,400 feet to the northwest from the settling ponds. The Desert Center Unified School District school sites are located approximately 600 feet to the north of sewage settling ponds located in Planning Area 11. This distance constitutes a substantial buffer between the settling ponds and these uses and is, therefore, not considered a significant impact.

Topical Land Use Issues. For onsite land use compatibility, the primary concern is the relationship between the proposed landfill and the adjacent Townsite. Impacts to the Townsite from the landfill resulting from traffic, air quality, visual, and noise are summarized below and discussed in detail in Sections 4.3, 4.4, 4.10, and 4.13.

Traffic and Transportation. Vehicular traffic associated with the proposed landfill operations (including waste transfer trucks) would be limited to Kaiser Road and would bypass residential streets within the Townsite. Trucks would be diverted from Kaiser Road into the landfill at the Planning Area 5 landfill truck entry located opposite the western edge

of Townsite Planning Area 9. Signage and operational guidelines would restrict truck access to other Townsite streets, thereby reducing traffic and congestion conflicts within the Townsite. Entry treatments and redesign of key intersections would reduce traffic conflicts along Kaiser Road and, therefore, minimize impacts. The results of the roadway segment operating conditions, contained in Section 4.3, indicate that acceptable roadway operations would continue to occur on all segments analyzed, and no significant impacts to roadway operations would occur. Intersection operating conditions would also remain at acceptable levels of service during peak hour operations at year 2010. With regard to potential delays to vehicular traffic using at-grade rail crossings, delays are expected to be minimal and, therefore, are not considered to be a significant impact.

Visual. Landfill activity would take place just north of Rail Yard I, approximately 2,000 feet north and west of the northernmost part of the Townsite. Initial landfill operations are anticipated to be below the line of sight of the Townsite. As landfill operations progress, the coarse-tailings pile would be reduced in elevation because it will be used for landfill liner and cover construction, and the landfill would eventually rise to where its working face will be in direct view of the Townsite. The visual impact analysis in Section 4.10.2, notes that the current dominant feature looking north from the Townsite is the mine, which contains graded areas that disturb natural colors and contours. To occupants of the Townsite, the proposed landfill would introduce a dominant landform into the foreground of lower-elevation mountain views to the north. Proposed grading would conform more closely to natural topography, and minimal grading of undisturbed areas would reduce visual impacts. Site improvements, such as implementation of the landscape plan at the Townsite, would improve visual quality at the site. A complete discussion of visual impacts is contained in Section 4.10, Visual Resources and Recreation.

Section 4.10.4, Nighttime Lighting, indicates that existing nighttime lighting at the Townsite (described in detail in Section 3.10.3) is a substantial, existing source of light. The additional lighting associated with the proposed Project would not significantly change the nighttime character in the vicinity of the Project. Significant reflected glare impacts are also not anticipated as a result of the proposed Project. A complete discussion of Visual Resources is contained in Section 4.10 of this EIS/EIR.

Air Quality (Windblown Dust). To reduce fugitive dust, water would be applied as a dust suppressant prior to excavating tailing materials, clearing material from pit benches, and excavating any ditches for landfill gas collection pipes. Water and/or chemical dust suppressants would also be applied during reconstruction of transitional roads, and during any other operations that could result in visible fugitive dust emissions. These measures would reduce potential impacts to the Townsite from fugitive dust to a level below significance.

Noise. Noise sources that potentially could affect the Townsite would be caused by waste transport via rail and truck, and by various landfill operation equipment. Noise generated by Project-related traffic would also be a concern. Rail access to the landfill would cross the southern portion of the Townsite through Planning Area 12, which is currently undeveloped

land and proposed for open space and recreation. The correctional facility Townsite Specific Plan, Planning Area 1, is approximately 150 feet from the railroad and approximately 1,200 feet from the proposed Rail Yard I (Landfill Specific Plan, Planning Area 2). In addition, the railroad is approximately 200 feet from the closest residential use in Planning Area 10 of the Townsite. According to the noise analysis contained in Section 4.13, rail operations adjacent to the Townsite would exceed the 65-dBA Community Noise Equivalent Level (CNEL) criteria within 200 feet of the spur track; the 60-dBA CNEL criteria would be exceeded only within 300 feet of the railroad. The noise levels will exceed the Model Noise Ordinance at Townsite residences within 200 feet of the track centerline. All other sensitive receivers within the Townsite are at greater distances and most would be shielded from rail noise by houses. Actual rail traffic will not reach these noise levels until after Rail Yard I is constructed. Much of the rail traffic will be diverted to this area, thereby reducing noise levels at all residences within the Townsite to acceptable levels. Therefore, rail traffic will not result in significant impacts to sensitive receivers at the Townsite. Increased vehicular traffic noise will result from hauling trucks and other vehicles gaining access to the site, including vehicles used by landfill employees. Noise level increases will range between 3 to 4 dBA at the Townsite due to Project-generated traffic. Nighttime truck traffic will be restricted or reduced along Kaiser Road until Rail Yard II is constructed. This will reduce noise levels to below significant levels at the Townsite. For construction, only one Townsite receiver residence would exceed the Model Community Noise Ordinance standards. This one receiver, however, already exceeds the standards, which results in no noise impacts. A complete discussion of noise impacts is contained in Section 4.13 of this EIS/EIR.

Mitigation. Development standards contained in the proposed Project design (i.e., the Landfill and Townsite Specific Plans) would mitigate any potential conflicts between the proposed landfill and the Townsite's existing and proposed residential, commercial, and correctional facility uses to a level below significance. Representative development standards include the following measures:

- Views into the working areas of the landfill would be partially obscured for several decades by existing stockpiles composed of coarse tailing materials or overburden. In later years, views into the active working areas would be obscured by screening berms built along the southern and eastern edge of the active working areas.

- Dust from equipment operation along haul roads in the industrial area adjacent to Kaiser Road would be controlled as needed with truck application of calcium lignosulphanate or other comparable solution.

- Dust from excavation of the tailings piles would be controlled as needed with the use of water trucks.

- Dust from loading operations at the working face would be controlled as needed by use of sprinkler systems.

- Landscape buffers between commercial and residential uses would be provided.

- Landfill trucks would bypass the Townsite residential areas by being restricted to Eagle Mountain Road and the last 2 miles of Kaiser Road.
- Landfill trucks would exit Kaiser Road before reaching adjacent residential areas.
- Sequencing of the landfill operations would allow adequate time to mine existing iron ore resources, if they are determined to be economical in the future.
- A minimum of 6 inches of daily cover would be placed over the refuse.
- Restrictions would be placed on equipment operation during nighttime hours, and improvements to the Townsite homes could incorporate hearing protection, noise insulation, and sound proofing.

Significance After Mitigation. Land use incompatibilities in the vicinity of the Project are anticipated to be reduced to less than significant levels by the mitigation measures discussed above. These mitigation measures would be implemented in the Specific Plans for the landfill and the Townsite.

Impacts on resource production uses are not considered to be significant, based upon the phasing attributes of the Project. Thus, implementation of the proposed Project would not be incompatible with existing land uses and would not result in a significant impact.

4.5.2.2 No Action Alternative

Impacts. Under this alternative, there would be no landfill development or associated Townsite repopulation and, consequently, no impacts associated with land uses of the Project. The land proposed for the landfill would remain in its present condition, which includes disturbed lands resulting from previous excavation, cutfaces, and deposited spoil materials interspersed with isolated natural canyons and ridges. The existing tailings, settling ponds, remnant mine operating equipment and facilities, dirt roads, rail lines, and other facilities from previous mining operations would also not be affected by the proposed Project. Essentially, no improvements would be made to the mine site, creating no impacts to onsite or surrounding uses. The mining reclamation plan prepared by Kaiser (Kaiser, 1978) pursuant to Ordinance 555 of the County of Riverside would continue in place. Specifically, "all machinery will be removed from the site. All shop and plant superstructure will be dismantled and removed. All visible man-made waste materials and scrap will be removed. All concrete foundations will be backfilled and leveled over with a minimum of 1 foot of gravel. Exposed utility lines will be removed. Access to all pits will be controlled with rock berms to prevent ingress by vehicular traffic. Pit bench slopes will be allowed to weather to their natural angle of repose. Rock waste dumps and tailings piles will remain at their natural angle of repose, which has proven to support voluntary growth of vegetation." (Kaiser, 1978)

The existing Townsite would also remain in its current condition. The existing correctional facility would continue to operate under the permits issued by the County. The commercial uses proposed for the Townsite would not be constructed. No further renovation beyond existing approved land uses would occur. In addition, the rights-of-way would not be issued, and the land exchange between the BLM and Kaiser would not occur.

Mitigation. No mitigation measures are required for this alternative.

Significance After Mitigation. Implementation of this alternative would not result in a significant impact.

4.5.2.3 Reduced Volume of Onsite Disposal Alternative

Impact. This alternative would allow for the disposal of up to 16,000 tpd of solid waste, including up to 14,000 tpd by rail and up to 2,000 tpd by truck. Total daily capacity of the landfill would be reduced by approximately 20 percent compared to the proposed Project, resulting in an approximate 20 percent extension in the life of landfill operations. Landfill operations and associated impacts would be similar to those of the proposed Project. This alternative would result in a slight decrease in the number of employees needed to operate the landfill. Because the life of the Project would be extended, employment within the landfill and housing opportunities within the Townsite would also be extended approximately 20 percent.

Mitigation. Mitigation measures would be essentially the same as those associated with the proposed Project.

Significance After Mitigation. Mitigation measures incorporated into this reduced volume Project design would reduce potential impacts to land uses to a level below significance.

4.5.2.4 Alternate Road Access Alternative

Impact. Under this alternative, potential land use incompatibilities in the vicinity of the Project would be similar to those of the proposed Project because traffic would be entering from the southeast boundary of the site where the Eagle Mountain Road extension into the landfill would intersect with Kaiser Road. This would create no change to the conditions discussed above under the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Land use incompatibilities in the vicinity of the Project are anticipated to be reduced to less than significant levels by mitigation measures listed above and implemented in the Specific Plan for the landfill and the Townsite.

4.5.2.5 Rail Access Only Alternative

Impact. The potential noise, air quality, and traffic impacts to existing and surrounding land uses from refuse trucks along Kaiser Road would be eliminated. Local refuse trucks would continue to use Kaiser Road to gain access to the existing County landfill on Kaiser Road. All other aspects of the proposed Project would remain the same.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Impacts would be reduced to below the level of significance.

4.5.2.6 Landfill on Kaiser Land Only Alternative

Impact. The land to be exchanged would remain under federal ownership and BLM administration. The land would most likely remain in its current state. The size of the landfill footprint would be reduced to approximately 399 acres and up to 10,000 tpd of waste would be accepted for disposal. This would result in a lower daily volume of refuse and a potential capacity of approximately 39 years. A change in the daily volume and lifespan of the landfill portion of the Project would not significantly alter the relationship between the landfill and the Townsite. Demand for housing and services at the Townsite would be reduced slightly, but not significantly. All other aspects of the proposed Project would remain the same.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Mitigation measures incorporated into the Project reduce impacts to land uses to below the level of significance.

4.5.2.7 Landfill Development/No Townsite Development Alternative

Impact. Under this alternative, the landfill would proceed as proposed, but the Townsite Specific Plan would not be approved. Renovation within the Townsite and subsequent repopulation would not take place. Employees of the landfill could reside in the existing improved structures reserved for Kaiser employees or would commute to the landfill site from Desert Center, Lake Tamarisk, Blythe, and eastern Coachella Valley communities. The Townsite Specific Plan would not be implemented, and existing vacant structures and property would remain unincorporated and unoccupied. Current occupants of the Townsite would continue to live much the same as they do now and would be subject to the impacts associated with the operation of the landfill as discussed under the Proposed Action above.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project, with exception of the Townsite.

Significance After Mitigation. Because the Townsite would not be repopulated in anticipation of development of the landfill, no impacts relating to the repopulation of the Townsite would occur, and, therefore, impacts would be below the level of significance. Impacts regarding the landfill are anticipated to be below the level of significance.

4.5.3 Compatibility of Project with Land Uses in the Immediate Vicinity

The following discussion focuses on potential impacts associated with the proposed Project and land uses in the immediate vicinity, including the Lake Tamarisk/Desert Center area; JTNP; rail transport compatibility; and other uses in the area such as mining activities, MWD facilities, agriculture, and schools.

4.5.3.1 Proposed Action

Impacts.

Immediate Vicinity. The proposed Project site is bordered on the north by undeveloped mountainous terrain and on the west by partially developed mountainous terrain. The northwestern boundary abuts mining activity extending to the west. The Central Pit is located immediately adjacent to the site; the Black Eagle North and South Pits are located farther to the west (see Figure 3.9-10). Project activities would be compatible with these adjacent mining areas. Grading associated with the landfill would be designed to blend in with the natural contours of the mountain face (see Section 4.10, Visual and Recreation). A provision is made in the Landfill Specific Plan to retain natural open space at the Project perimeter adjacent to the undisturbed mountain areas within Planning Area 6.

With the exception of the Colorado River Aqueduct, which is maintained by MWD and located east of the border of the Specific Plan for the landfill, the Project site is bordered on the east by undeveloped desert terrain. The aqueduct extends across the Chuckwalla Valley from the northeast as a concrete-lined open channel. When it is within approximately 750 feet of the northeast corner of the Landfill Specific Plan (Planning Area 6d–see Figure 2-8), it extends to the south as an underground enclosed channel, paralleling the eastern boundary of the Landfill Specific Plan approximately 600 feet from the landfill Planning Areas 6d and 4. The landfill and Townsite Specific Plan land uses do not create conditions that would pose compatibility problems with the aqueduct.

The MWD maintains a small airstrip approximately 500 feet south of the boundary of the Landfill Specific Plan and approximately 1,700 feet southeast of the boundary of the Townsite Specific Plan. The minimal size and restricted use of the airstrip do not pose any conditions that would result in incompatibility between the Project uses and the airstrip. MRC, Kaiser, and MWD have entered into a MOU to address access, drainage, and operation of the airstrip. The MWD also maintains a pumping station approximately 2 miles south of the Project site (see Figure 3.5-3), which includes 15 single-family homes and a dormitory for MWD employees. Because of the distance of the Project site to these residences and the fact that the Eagle Mountain Road extension (the primary route for waste-hauling vehicles) will

bypass the pumping station, the Project will not result in any significant land use impacts at this location.

The Townsite is partially bordered on the east by Desert Center Unified School District (District) property, containing the vacant Junior High School Campus and High School Campus, currently in use as an elementary school. This facility is located approximately 500 to 1,000 feet south of the Project boundary and is buffered from the landfill site by compatible land uses within the Townsite. The uses proposed for the Townsite include residential and commercial along the school property's northern boundary, a proposed park, residential and open space on the west and proposed open space on the south. These uses are generally compatible with the existing school uses because the school site is separated from residential and commercial uses by Yucca Drive, and the planned commercial uses would also have a landscape buffer along its southern boundary. As discussed previously, the school site is separated from the wastewater treatment facility by about 600 feet within the proposed open space area in the Townsite. Because this represents a substantial buffer between the two uses, it is not considered a significant land use impact. Additionally, the Desert Center Unified School District maintains a fence along Yucca Drive to control movement of children along this roadway.

Lake Tamarisk/Desert Center. Land uses at greater distances from the Project site include the community of Desert Center, approximately 11 miles south of the Project site, and the community of Lake Tamarisk, about 8 miles south. At its closest point, the Eagle Mountain Railroad is approximately 4.5 miles west of both communities. Eagle Mountain Road, which would be used for hauling waste by truck, is 2 miles west of these communities. According to the updated traffic impact study, summarized in Section 4.3 and contained in its entirety in Appendix D, all area roadways would continue to operate at acceptable levels of service for future conditions.

The visual impact analysis contained in Section 4.10.2, Visual Resources, notes that the Project site is substantially disturbed by mining activities, and that the proposed landfill is the most noticeable feature with potential to impact the proposed Project. Views from Desert Center are not identified as having a significant impact because of their distance from the Project site and the fact that the landfill is generally more visually compatible with the surrounding Eagle Mountains than existing onsite features. Views of the proposed Project site from Lake Tamarisk would not substantially change the visual contrast level at the mine site. Design standards incorporated into the Landfill Specific Plan would assist in minimizing any negative visual impacts.

Agriculture, Recreational, and Other Uses. As discussed in Section 3.5, there are approximately 668 acres of agricultural land currently in production near Desert Center, most of which is under cultivation with jojoba and asparagus. The proposed Project will not displace or interfere with these agricultural activities, and no significant impacts upon agricultural resources are expected to occur. Recreational activities on lands administered by the BLM in the Eagle Mountains and Chuckwalla Valley would not be disturbed by the proposed Project because much of the land immediately surrounding the Project site has been

disturbed by mining and other urban activities and is, therefore, no longer desirable for recreational activities.

Other land uses in the Project area include two houses and various mobile homes located approximately 2.5 miles southeast of the Project site. Scattered single-family residences, additional small mobile home parks, and commercial activities are located on Rice Road approximately 10 miles southeast of the site. A small county landfill off Kaiser Road is approximately 5.5 miles southeast of the Project site.

Joshua Tree National Park. The area of JTNP located approximately 1.5 miles north of the Project site is known as the Pinto Basin Planning Unit. This portion of JTNP contains no campgrounds, picnic areas, parking, or structures and is accessible only on foot. Hiking in this area is limited to the amount of water an individual can carry. Summer temperatures in JTNP typically exceed 100° F and hiking in the Pinto Basin is not recommended (Furbush, 1992). According to JTNP's General Management Plan (NPS, 1995), no improvements such as campgrounds and picnic areas would be provided and no road improvements would be made in this area adjacent to the proposed Project site. In addition, the areas of JTNP with the greatest visitor use are the western portions of the park (NPS, 1995). These use areas are shown in Figure 3.11-6. The eastern areas of JTNP have no designated trails, campsites, or visitor facilities. In addition, vehicular access to this area of JTNP is prohibited. The recreational impacts to JTNP are discussed in Section 4.10.5.

The Project site can be seen from the Coxcomb Mountains within JTNP, looking west, and the high ridges of the Eagle Mountains closest to the proposed Project site. The existing mine with its slopes and terraces and the tailings mound is distinguishable against the backdrop of the Eagle Mountains. Proposed grading would conform more closely to natural topography, and minimal grading of undisturbed areas would reduce visual impacts. Site improvements, such as implementation of the landscape plan at the Townsite, would improve visual quality at the Townsite portion of the Project site. Views from most surrounding areas would eventually be more compatible with the natural environment than the present condition. Visual impacts to JTNP are discussed in Section 4.10.2.

Areas requiring night lighting would be at or near existing light sources at the Townsite, which is currently visible for over 30 miles, largely because of the security lighting associated with the community correctional facility at the Townsite. Visitor use of the JTNP in the area immediately surrounding the Project is expected to be low, particularly at night, because of the lack of vehicular access into this area, the prohibition of campfires in designated wilderness areas, and the fact that hiking is limited by the amount of water an individual can carry. In addition, the Eagle Mountains would block views of the night sky above the Project site in the Pinto Basin area to the north and west of the Project site. Lighting would be shielded and directed downward to reduce glare. Because of these factors, the Project is not expected to result in a significant increase in night illumination over existing conditions, as seen from the JTNP. Section 4.10 contains a more detailed discussion of visual impacts.

There will be no direct impacts on the JTNP from fugitive dust emissions due to implementation of the measures discussed in Sections 4.4 and 4.10. As discussed previously, other air quality issues are not sufficiently related to land use to merit discussion in this chapter because they are of a regional and cumulative nature. Refer to Section 4.4 and Appendix E for a complete discussion of air quality impacts on the JTNP.

Noise levels inside the JTNP would vary, depending on the distance and topography between the receiver location and the landfill operation. Noise levels at JTNP from trains are expected to increase by an imperceptible amount near the JTNP borders within 6,000 feet of the Eagle Mountain Railroad. Project-related vehicular traffic noise is expected to increase at JTNP's eastern boundary, which is the nearest boundary to Eagle Mountain Road by approximately 5 dBA. At the wilderness boundary of JTNP, this noise level is expected to increase by 1 dBA, which is a level of increase that is indiscernible to the human ear. For operations-related noise, average hourly L_{eq} noise levels at the JTNP wilderness boundary nearest the rail yard could range from 1 to 2 dBA, which is generally imperceptible to the human ear. Actual noise levels are expected to be lower because of the intervening topography between the rail yard and the wilderness area. Noise levels at the JTNP and JTNP wilderness area during construction could increase by up to 7 dBA and 2 dBA, respectively. These levels are below the impact criteria for noise increases.

For biological resources, a variety of proposed mitigation measures would reduce impacts to a level below significance. For bighorn sheep, three permanent water sources will be installed distant from the proposed Project site to encourage the species to use surrounding natural areas.

If the sheep are not naturally expanding their ranges, they will be translocated. For Desert Pupfish, annual monitoring will be conducted by the California Department of Fish and Game (CDFG) and a series of inspections of locomotive fuel tanks, weed abatement, and actions by an emergency response team will be implemented. Other biological resources mitigation measures will be conducted for ravens, the California leaf-nosed bat, and the foxtail cactus. In addition, an Environmental Trust Fund would generate approximately $710 million (or $6 million per year) to purchase additional lands for measures protecting biological resources. These would offset any negative biological impacts. Project impacts to vegetation and wildlife are summarized in Section 4.7.

Bureau of Land Management. As discussed in Section 3.11, Wilderness, there are four wilderness areas administered by the BLM within 50 miles of the proposed Project, including the Palen McCoy Wilderness (approximately 15 miles east of the Project site), the Chuckwalla Mountains Wilderness (approximately 14 miles south of the Project site), the Orocopia Mountains Wilderness (about 20 miles southwest of the Project site), and the Mecca Hills Wilderness (30 miles southwest of the Project site). These wilderness areas, as well as the JTNP, are shown in Figure 3.11-1.

With regard to the Project's effect upon the BLM boundary modifications that incorporate land to the south and west into JTNP, no significant impacts are anticipated. This is because the part of the Project site closest to the area in question is a buffer area under the Specific Plan for the Townsite and would be managed as an open space resource along the perimeter of the Project.

Rail Transport Compatibility. Land use impacts along the regional rail corridors that would be used to transport the solid waste to the landfill site are anticipated to be negligible and are determined not to be significant. This is based upon the fact that rail lines, such as the Southern Pacific Railroad, are existing and represent established land use relationships that would not be adversely affected by the minor increase in train traffic anticipated for any specific rail line. Other specific impacts along the rail line network, such as traffic and noise, are addressed separately in this EIS/EIR (see Sections 4.3 and 4.13).

Mitigation. Based on the previous discussion and impact conclusions contained in other sections of this EIS/EIR, no significant land use conflicts are expected to occur between the Project site and the communities of Lake Tamarisk and Desert Center or any other land uses in the vicinity. This is based primarily on the distances from and nature of those developed uses and the open-space areas surrounding the Project site. Mitigation measures throughout this EIS/EIR are designed to minimize any potential land use conflicts, and no further mitigation is necessary.

Based on the previous discussion and impact conclusions contained in other sections of this document, no significant land use conflicts are expected to occur between the Project and JTNP, and design features incorporated into the proposed action would minimize any potential land use conflicts. Representative Project-design features include the collection of fees to offset biological impacts; daily cover of refuse with earthen material to control offsite litter; grading of the site to conform with natural features; and using directional, rather than flood, lighting. A variety of measures would be used to control fugitive dust, including application of water to all temporary, unpaved roads and application of chemical dust suppressants on a base of crushed rock on all permanent, unpaved haul roads, intermodal yards, and truck marshaling yards. Other measures include prewatering tailings and overburden piles prior to excavation, application of chemical suppressants to inactive areas disturbed by excavation, and requiring haul trucks to enter a wheel-washing station prior to leaving the site.

Significance After Mitigation. Land use compatibility impacts are not considered to be significant after implementing mitigation measures throughout this document.

Land use compatibility impacts between the Project and JTNP are not considered to be significant after implementing mitigation measures discussed throughout this EIS/EIR.

4.5.3.2 No Action Alternative

Impacts. The Project area would remain in its present state (i.e., no landfill would be developed and renovation to the existing Townsite beyond existing, approved uses would occur). No impacts to surrounding land uses would occur. Buffer areas would not be established and the open space trust would not be funded from the landfill operations.

Mitigation. Because no impacts are expected to occur as a result of this alternative, no mitigation would be necessary.

Significance After Mitigation. Implementation of this alternative would not result in a significant impact.

4.5.3.3 Reduced Volume of Onsite Disposal Alternative

Impacts. This alternative would result in impacts similar to those for the proposed Project, although there could be incremental reductions in traffic and noise impacts associated with reduced daily demand for employees and a possible reduction in daily train trips.

Mitigation. Mitigation measures would be essentially the same as those associated with the proposed Project.

Significance After Mitigation. Mitigation measures incorporated into this reduced scale Project design would reduce potential impacts to land uses to a level below significance.

4.5.3.4 Alternate Road Access Alternative

Impacts. Under this alternative, transfer trucks would use the existing Kaiser Road to haul waste to the landfill site instead of the existing Eagle Mountain Road and its proposed extension. The existing Kaiser Road is located approximately 3 miles east of Eagle Mountain Road, and extends approximately 11 miles to the landfill site from Interstate 10. Because most of the waste that will arrive by truck for disposal at the landfill is anticipated to come from western Riverside County, Kaiser Road would not be as direct a route to the landfill as is Eagle Mountain Road, resulting in an additional 7.5-mile round trip for each truck. Although traffic would increase in the area of Lake Tamarisk and Desert Center as a result of using Kaiser Road, the level of service (LOS) would remain within acceptable levels. Conclusions regarding impacts would not change. With regard to visual effects, there would be a slightly higher impact under this alternative than under the proposed Project because of the increase in truck headlights adjacent to residential uses. As a result of existing lighting from traffic along Kaiser Road, however, nighttime lighting impacts associated with this alternative would be less than significant because of the visibility of existing lighting at the community correctional facility (see Section 4.10).

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The impact to existing developments in the Chuckwalla Valley, including Lake Tamarisk, Desert Center, and other scattered residential uses, is not considered to be significant as a result of a minor change in traffic circulation. All other aspects of this alternative are the same as those of the proposed Project. Impacts would be reduced to below the level of significance.

4.5.3.5 Rail Access Only Alternative

Impacts. This alternative would eliminate the use of all non-Chuckwalla Valley refuse-hauling trucks to the proposed landfill site, resulting in a reduction in the capacity of the landfill to 18,000 tpd. This alternative would preclude transporting waste from nearby sources in the Blythe and Coachella Valley areas. Noise and traffic impacts to existing and surrounding land uses from refuse trucks along Eagle Mountain Road and Kaiser Road would be eliminated. All other aspects of the proposed Project would remain the same.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Impacts are expected to be reduced to below the level of significance.

4.5.3.6 Landfill on Kaiser Land Only Alternative

Impact. This alternative would result in reduced traffic and noise due to a reduction in the number of employees required to operate the landfill. Views of those lands not being exchanged would remain essentially the same as their current condition because no landfilling would occur on those lands. The reduced area of the landfill footprint could slightly affect visual and noise compatibility concerns. Other impacts would be similar to the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Mitigation measures incorporated into the Project would reduce impacts to land uses to below the level of significance.

4.5.3.7 Landfill Development/No Townsite Development Alternative

Impacts. This alternative would result in landfill employees seeking housing in existing communities in reasonable proximity to the Project. Employees would most likely commute to the site from Lake Tamarisk, Desert Center, Blythe, or other local desert communities in the eastern Coachella Valley. Traffic and associated impacts would increase along Kaiser Road, portions of Desert Center/Rice Road, and the area of the Interstate 10 interchange. Adjacent land uses could be impacted by such congestion. Demand for housing could create commercial and housing development activity in Lake Tamarisk and Desert Center. This

alternative would reduce concerns about the proximity of permanent residents to the newly designated JTNP. Current residents associated with the correctional facility and Kaiser would remain at the Townsite.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project, with the exception of those measures associated with the Townsite. It is expected that the existing communities of Blythe, Desert Center, Lake Tamarisk, and other eastern Coachella Valley communities could absorb the need for employee housing. This alternative, however, could encourage some new housing production.

Significance After Mitigation. Because impacts within the Townsite would be substantially reduced because of no further development, potential impacts would be below the level of significance. Impacts for the landfill would not differ from the proposed Project and are anticipated to be below the level of significance.

4.5.4 Consistency of Project with Land Use Plans and Policies

4.5.4.1 Proposed Action

Specific plans are being prepared for both the landfill and the Townsite. A complete discussion of consistency with the County of Riverside General Plan is contained in each specific plan.

Impacts. The consistency of the proposed Project with the County of Riverside General Plan, County Zoning Regulations, the BLM's California Desert Conservation Area (CDCA) Plan, and the operations of the MWD aqueduct, are evaluated below.

County of Riverside: General Plan's Land Use Designation System. Land use planning and development in the County is guided by the County's General Plan. Those elements of the General Plan that address land use policies applicable to the proposed Project include the Land Use Element and the Open Space and Conservation Element. The Land Use category designations on the Project site are determined through the Land Use Determination System, which uses the County's land use policies in conjunction with the General Plan diagrams. The land use determination system includes four steps which are discussed below. A detailed discussion of the land use determination system and General Plan consistency is contained in Chapter V of the Landfill Specific Plan (No. 305) and the Townsite Specific Plan (No. 306).

Step 1: Review of the Open Space and Conservation Map. The Open Space and Conservation Map designates the Project site as Mountainous Areas, Desert Areas, Mineral Resources, and Areas Not Designated as Open Space (see Figure 3.5-6). The entire Project site (i.e., the landfill and Townsite) contains approximately 5,082 acres, of which 2,071 acres are in Mountainous Areas, 1,792 acres are in Desert Areas, 810 acres are in Mineral Resources, and 409 acres are in Areas Not Designated as Open Space.

Land uses proposed by the Landfill Specific Plan are consistent with the Desert Areas and Mountainous Areas designations because the Open Space and Conservation policies indicate that landfills are permitted uses in those designations. Landfills are not specifically listed as permitted uses in areas designated as Mineral Resources. Uses compatible with mining, however, are listed as permitted uses. Consequently, the Specific Plan and General Plan amendment will serve to amend the General Plan and make the Project and General Plan consistent.

Land uses proposed by the Townsite Specific Plan are consistent with the lands designated as Desert Areas, which are south of the railroad. Because the Open Space and Conservation policies for this designation do not allow commercial or industrial development, but do allow governmental uses, the Specific Plan retains this area in open space and maintains the existing wastewater treatment facility as an ongoing use. The Areas Not Designated as Open Space (ANDAOS) category, which contains all of the Townsite's existing urbanized area, does not qualify as either an open space or conservation category. Consequently, it is necessary to proceed to Step 2 to determine consistency.

Because of these General Plan map and text policies, as well as the lack of zoning to allow the proposed landfill and establish standards for its operation, the Project includes General Plan Amendments, Changes of Zone to the Specific Plan zone classification, the preparation of Specific Plans, a Development Agreement, a Revised Reclamation Plan, and a Subdivision Tract Map for the Townsite. In consideration of these amendments to local requirements, this proposal will not conflict with any other general goals, standards, or policies of the General Plan. These actions would bring the proposed Project into consistency with the General Plan.

Step 2: Review of the Environmental Hazards and Resource Map. According to the Composite Environmental Hazards Maps, the northwestern portion of the Project site is in Mountainous Areas and Major Scenic Peaks. The maps show a closed public/private landfill south of the site and an active landfill approximately 5 miles southeast of the site. Neither landfill is on the Project site. Noise on the Project site is largely a result of automobile traffic serving the residential and nonresidential uses of the Townsite. In addition, there are railroad lines on the Project site that previously served the iron ore mine. Noise impacts are discussed in Section 4.13 of this EIS/EIR. All noise impacts would be mitigated to meet County standards.

The Composite Environmental Resources Map identifies a range of Rare, Endangered and Threatened Species. Most of the Project site is shown as being within this range. A detailed biological survey has been conducted for this EIS/EIR, and the location of sensitive biological species on the Project site has been identified in the study (see Sections 3.7 and 4.7, and Appendix G of this EIS/EIR). Without mitigation, there is a potential for significant impacts to individual species. As a result of the land exchange between Kaiser and BLM, however, there would be a net gain of biological habitat. Other mitigation measures discussed in Section 4.7 of this EIS/EIR would reduce the impacts to a level that is below significance. In addition, fees would be paid to the County to acquire habitat for special

status species in the region. A portion of these fees would be used to monitor effects of the landfill on species in the area. Adjustments in landfill operation would be made if significant effects are found. In addition, a fee would be paid to the University of California to establish an offsite population of the Salt Creek pupfish. (See Section 4.7.)

Step 3: Land Use Planning Area Profiles. Land Use Planning Area profiles provide background information for each Land Use Planning Area, and are the third step of the Land Use Determination System. This step involves the review of only that profile in which the site in question is located. The Land Use Element identifies the Project site as being within the Chuckwalla Land Use Planning Area of the Riverside Desert Subregion. The Chuckwalla Land Use Planning Area occupies approximately 3,629 square miles of the easternmost portion of the County of Riverside. It is bordered by JTNP to the west, San Bernardino County to the north, Imperial County to the south, and the Arizona State boundary to the east. The only incorporated city within this area is the City of Blythe. The Chuckwalla Land Use Planning Area is the largest, but the least populated, in the County.

This Planning Area exhibits the lowest growth potential when compared to the other Land Use Planning Areas in the County. At this time, there are no significant growth-inducing factors, but significant environmental resources exist within this land use planning area, including mineral and biological, that could alter the character of the area. A number of characteristics that may contribute to land use potential in the vicinity of the Project do exist that are not noted in the Chuckwalla Land Use Planning Area discussion contained in the General Plan. They include: (1) the Eagle Mountain Community Correctional Facility; (2) the Eagle Mountain Railroad line; (3) the state prisons at Willey's Well Road and I-10 near Blythe; (4) the Eagle Mountain MWD Pumping Plant and community; (5) the Chiraco community and County air strip; (6) the Desert Center community and air strip; (7) the MWD Colorado River Aqueduct; (8) the available housing stock and infrastructure at the Townsite, (9) Eagle Mountain school facilities; and (10) housing sites within Lake Tamarisk community.

The General Plan notes the significant economic impact due to the cessation of mining operations in the Eagle Mountain area. It should be noted that the Eagle Mountain School continues to remain open, and the development of the Eagle Mountain Correctional Facility has resulted in the reoccupation of portions of the Townsite (see Section 3.5).

With approval of the proposed landfill and repopulation of the existing Townsite, no significant growth-inducing impact is expected to occur. This is discussed in detail in Section 4.8, Growth Inducement and Socioeconomics.

Step 4: Land Use Determination. This step involves the review of the five land use categories and the appropriateness of the proper category for the proposed Project. Each of these are listed and briefly discussed below. A full description of these categories can be found in each of the Specific Plans for the Townsite and the proposed landfill.

Category I—Heavy Urban. Heavy urban land uses are characterized by intensive commercial and industrial uses and higher residential densities. Category I uses are generally located within, or are extensions of, existing communities and require a full range of public services, including water distribution, sewage collection, adequate circulation system, and utilities such as natural gas, electricity, and telephone service. These uses must also locate within a major transportation corridor such as a freeway, an expressway, or an arterial highway with sufficient capacity to accommodate projected traffic increases.

Category II—Urban. Category II land uses include residential, commercial, and industrial uses, which are located within existing communities' or cities' spheres of influence and require a full range of public services, including water distribution, sewage collection, adequate circulation, and utilities such as natural gas, telephone service, and electricity. Category II land uses must be served by arterial highways, major highways, and secondary highways with sufficient capacity to accommodate traffic generated by the Project.

Category III—Rural. Category III land uses are characterized by lower residential densities and fewer public facilities and services. Uses can include agriculture, small-scale commercial, and light industries. Category III land uses must locate away from existing urban centers and are often characterized by a dominant interest in agriculture, equestrian activities, or a "small town" lifestyle. Water service for this category can be provided by a special district or by wells. Sewage service can be provided through a district collection and treatment system, or by individual septic tanks. Proposed land uses must show adequate and available water and sewer facilities, water resource availability, and, if applicable, sewage treatment plant capacity, or adequate soil percolation conditions to accommodate the proposed land use. Commitments for water and sewer service must be confirmed by the appropriate special district. Category III land uses are often located in areas that contain secondary, collector, and local roads. The circulation system serving the proposed land use must be capable of accommodating traffic generated by the proposed use.

Category IV—Outlying Area. Category IV land uses contain the least intensive land use of the five land use categories. Category IV land uses are generally located near large tracts of publicly owned land, and are often used for agriculture, mining, industry or low-density residential uses. Category IV land uses are located in outlying areas away from urban centers, are without improvements, and are generally "self-sufficient" in terms of water supply, sewage disposal, commercial needs, and other public facilities and services. Category IV land uses generally provide only basic road improvements. Roads are usually paved, but some roads may be unpaved, consisting of dirt or decomposed granite. Primary access in this category is usually via two-lane county or state highways. The circulation system within the area must be able to accommodate the projected increase in traffic from the proposed land use.

As with Category III, Category IV policies require that a project be located in an outlying (rural) area, and Category IV projects generally consist of mining, industry, or low-density residential uses. Category IV policy requires that a project's residential development be at a

density of one unit per 5 acres or more. The proposed Project specifies residential development at densities greater than those allowed by Category IV.

Category V—Planned Community. Category V is a unique land use category that allows the development of new towns and communities within the County. Planned Communities are large-scale projects, designed as balanced communities, which may contain a variety of residential, commercial, industrial, and open space uses. The land uses are largely self-supporting and must be able to provide the highest level of public services consistent with an urban land use.

Category V projects must include a mix of land uses and densities, including a variety of housing types, local commercial uses that meet community consumer needs, and a significant employment base to serve as a balance to the creation of new housing. The new project(s) do not have to provide new community centers if ones that exist nearby can provide sufficient service. The emphasis within this category is for a balanced community and the creation of significant employment opportunities.

Summary of Land Use Determination. After review of the five land use categories, it is determined that the proposed Project would best fit into Categories III and IV for the following reasons: The Townsite portion of the proposed Project is located in a rural area and proposes land uses such as low-density, single-family residential and small-scale commercial uses to serve the onsite development and industrial uses. As stated in the County General Plan, Category III locational policies require that a project be located away from existing urban centers. Because the proposed Project site is located about 50 miles west of the City of Blythe and about 60 miles east of the City of Indio, the nearest urban centers, the Project complies with Category III locational policy.

The Project area is currently provided with nonpotable water from two wells. Sewer service is provided to a wastewater collection facility with a design capacity of 270,000 gallons per day. The current operating permit issued by the Regional Water Quality Control Board (RWQCB) is for 35,000 gallons per day based on the current level of discharge. Drinking water is currently being transported to the site as bulk delivery of potable drinking water. Under the proposed action and as residency increases as the result of repopulation of the Townsite, Kaiser and the County of Riverside Department of Environmental Health will develop a strategy and enter into an agreement to provide potable water that meets both state and federal quality standards. Such treatment facilities could occur at either the source, the booster stations, or the storage reservoirs. This use associated with the Townsite portion of the proposed Project is considered to be consistent with Category III land use policy.

The landfill portion of the proposed Project contains approximately 90 acres designated ANDAOS at the Eagle Mountain Mines' former ore processing area which will contain the proposed landfill's Phase I Rail Yard and other supporting uses. The Project, including this area, is self-sufficient in terms of water supply, sewage disposal, commercial needs, and reliance on other public facilities and services. Therefore, Category IV is the most applicable

land use category for the ANDAOS portion of the Project site. Landfills are permitted in this land use category.

County of Riverside: General Plan's Land Use Goals. Each element of the General Plan includes specific goals to be used as guidelines for implementation of development policies in the County. The Land Use Element lists goals identified in the general plan and discusses the proposed Project's consistency with them.

Goal 1. *The maintenance and improvement of the quality of life in the County, and the protection of the public health, safety, and welfare.*

The proposed Project would maintain and improve the quality of life in the County by providing a Class III municipal solid waste landfill designed to provide protection of the public's health, safety, and welfare. The proposed Project operation would require jurisdictions to comply with AB 939 before refuse is accepted. The landfill would be constructed with a composite liner system designed to prevent leachate from reaching the groundwater (see Section 4.1). In addition, a landfill gas collection and flaring system would be installed to collect gas generated by the solid waste through a series of horizontal pipes and vertical wells.

Goal 2. *The attainment of a County growth pattern which is orderly and efficient, and which minimizes vehicle miles traveled and improves job/housing balance.*

The proposed Project would attain an orderly and efficient growth pattern that minimizes vehicle miles traveled by providing housing within the proposed Project. Employees of the landfill portion of the proposed Project can live within the existing Townsite, which will provide housing opportunities for those who wish to live close to the job site. In addition, other proposed commercial land uses within the existing Townsite would provide various job opportunities for those who live within the Project boundary, and improve the jobs/housing balance. Existing vacant dwelling units could be renovated for habitable uses, and existing concrete slabs could be constructed as new housing if need arises for Project site employees.

Goal 3. *The achievement of a well balanced and diversified economy within the County, with a variety of economic and employment opportunities.*

The proposed Project would help achieve a well balanced and diversified economy within the County by providing a variety of economic and employment opportunities. People within the Project area would be provided with jobs at the proposed landfill and the existing Townsite. Within the existing Townsite, additional jobs would be provided by the correctional facility, the fire station, and shopping areas as well as future prison or commercial development. With the influx of school-aged children, additional employment would be generated at the Desert Center Unified School District. Within the proposed landfill, people would be provided with jobs involving operating equipment and administrative duties.

Goal 4. *The development of those areas where necessary public services can be provided and development is compatible with surrounding land uses.*

The proposed Project would develop areas where public services are already being provided (fire protection, utilities, and communications), so as to minimize construction of entirely new facilities. Additional infrastructure users could easily be accommodated through existing services and infrastructure. Development of the Project site also would be compatible with surrounding land uses (see discussion on Surrounding Land Uses) and consistent with the General Plan as discussed above.

Goal 5. *The distribution of commercial facilities in a manner that will provide an adequate supply of goods and services to the residents of the County.*

The Project site is currently being provided with an adequate supply of goods and services based on current usage. The proposed Project would accommodate the distribution of commercial facilities in a manner that would continue to provide an adequate supply of goods and services to the residents of the immediate area. Commercial centers would be designed in a cluster rather than strip commercial. This would allow uses to concentrate within a certain area and reduce traffic trips.

Goal 6. *Orderly industrial development which includes a variety of types of industry and the promotion of adequate supplies of suitable and properly distributed industrial land.*

The proposed Project is focused toward one type of industry (solid waste). Designating portions of the Townsite as commercial-manufacturing (some of which contain existing uses such as the community correctional facility), however, would add to the amount and distribution of industrial land within the County, thus promoting suitable and properly distributed industrial land. The proposed Project would include two General Plan Amendments, two Changes of Zone, two Specific Plans, a Development Agreement, Townsite Tentative Tract Map, Amended Reclamation Plan, a BLM/Kaiser land exchange, and rights-of-way. This would bring the proposed Project into consistency with the County's General Plan and Zoning Ordinance. Lands would then be properly suited for the proposed use.

Goal 7. *The retention as open space of those lands containing important natural resources, such as scenic beauty, sensitive vegetation, wildlife habitats, and historic or prehistoric sites, or which are subject to environmental hazards, such as scenic hazards, flooding, hazardous slopes, and high fire risks.*

The proposed Project would retain as open space, through a land exchange, those lands containing important natural resources. Currently, portions of the lands within and surrounding the Project site are in public ownership (BLM) and consist of disturbed and undisturbed open space land. The disturbed lands owned by the BLM are proposed to be transferred to Kaiser ownership, and the undisturbed lands owned by Kaiser would be transferred to BLM ownership. The footprint of the disturbed land is where the proposed

landfill would be located, and the undisturbed lands contain sensitive biological species to be managed and preserved by the BLM. Other land located at the western boundary of the Project site is also proposed to be left in its natural condition to provide open space between the proposed Project and the JTNP.

The Comprehensive General Plan contains a Solid Waste Element (pages 256-258.1). The objectives of this element are to provide adequate disposal capacity to accommodate existing and future solid waste generation, to minimize and mitigate the environmental impacts of these facilities, and to encourage waste management strategies to facilitate resource recovery in all new development proposals. The Solid Waste Element states that existing and proposed landfill sites established by the County Solid Waste Management Plan (County of Riverside, Solid Waste Management Plan [CoSWMP], 1989, page XI-28) are to be shown on the General Plan County-wide Information Map of Public Facilities. As a part of the General Plan amendment, the public facilities map must be amended to indicate the landfill portion of the proposed Project as a landfill site. A land use standard text states that all new proposals for solid waste disposal and/or resource recovery sites shall be consistent with the CoSWMP.

The CoSWMP implements land use considerations mandated by state law as it applies to the County. The CoSWMP includes the proposed landfill as a tentatively identified waste disposal site and states:

> "Although the site has several attributes that favor development of such a facility and has been included herein as a tentatively identified landfill, before it can be developed, considerable engineering, environmental, and economic studies must be completed and evaluated to determine that there will be no degradation of groundwater, or other adverse, irreversible environmental impacts."

The CoSWMP also notes that pursuant to Title 7.3, Section 66780.2, of the Government Code, a tentatively identified site can be removed from the CoSWMP if the County fails to make a finding that the site is consistent with the General Plan, or has made a finding that the site should not be used for a solid waste management facility. A tentatively identified site may also be removed if the California Integrated Waste Management Board (CIWMB) refuses to concur in the issuance of a solid waste facility permit for the site because of the County's failure to make the finding that the site is consistent with the General Plan. Further, siting approval by CIWMB requires a finding from the County that the distance from the solid waste facility to the nearest residential structures is in compliance with all of the State Minimum Standards, pursuant to Section 66784.2 for solid waste management, and that the distance is sufficient to permit adequate control of noise, odor, nuisances, traffic, litter, and vectors.

Although the CoSWMP is the most recent County document that will be used to evaluate the Project, the County is currently preparing the County of Riverside Integrated Waste Management Plan (CIWMP), which will replace the CoSWMP. Until the CIWMP is approved, however, the County can review projects identified as waste disposal sites in the

CoSWMP. There is also "gap" legislation that allows the County to consider landfill projects that are not in the CoSWMP. The Siting Element of the proposed CIWMP also identifies and describes the Eagle Mountain Mine site as a potential landfill. An amendment to the General Plan will be made that references the CIWMP after the CIWMP has been approved.

Closure and postclosure maintenance activities for the proposed Project will be developed to meet the requirements of Article 8 of Chapter 15, Article 7 of Title 14, 40 Code of Federal Regulations, Sections 258.60 and 258.61. Closure activities will include final grading, placement of final cover, construction of final portions of the leachate and landfill gas management systems, continued operation of the LCRS and leachate management system, continued operation of the active gas recovery system, continued operation of the gas maintenance system, construction of final surface-water drainage controls, construction of the final erosion and sediment controls, removal of structures, continued site monitoring, and final site security and access.

Postclosure maintenance activities at the proposed landfill will be conducted for 100 years to maintain the integrity of the various engineered systems at the proposed landfill. The closure and postclosure plans for the proposed landfill are discussed in more detail in Section 12 of the ROWD. MRC would ensure that sufficient funding is available to perform the necessary closure and postclosure activities in the form of a trust fund (as required by Subtitle D provisions implemented by the CIWMB) to be established prior to proposed landfill operations. At present, it is anticipated that, after closure, the inactive mining area (proposed landfill) would be used for passive recreational or open space uses, which would be compatible with existing and anticipated recreational and open space uses in the surrounding area.

County of Riverside Zoning Ordinance. General Plan land use policies applicable to the Project site are implemented by several zoning categories of the County Zoning Ordinance. Most of the former mining and processing areas of the site are zoned Mineral Resources and Related Manufacturing (M-R-A) (see Figure 3.5-7). This zone provisionally permits mining and related processing uses with the issuance of a permit under County Ordinance No. 555, implementing the State Surface Mining and Reclamation Act. In addition, this zone provides some performance standards concerning noise, road criteria, slopes, and other land use and operation considerations.

Current zoning of the Townsite portion of the proposed Project includes General Commercial (C-1), Mineral Resources and Related Manufacturing (M-R-A), Natural Assets (N-A), and Controlled Development (W-2). Uses allowed under the C-1 zoning designation include offices, retail, and service activities. Uses allowed under the W-2 zoning designation include residential, light agricultural, and institutional uses with plot plan approval and a conditional use permit limited to mining and commercial/agricultural uses. Under the N-A zoning designation, permitted uses include residential and limited agricultural uses. Other uses include: (1) limited water and power utilities; (2) recreational uses; (3) agricultural residences; (4) recreational vehicle parks; (5) golf courses; and (6) surface mining and related activities subject to various land use approvals. These zones will be replaced by a Specific

Plan zone designation for each portion of the proposed Project (Landfill and Townsite), supported by a zoning ordinance (Landfill Specific Plan No. 305 and Townsite Specific Plan No. 306). The Specific Plan zone would be created to support the addition of the landfill, expanded development of the existing Townsite, and associated uses for each.

Bureau of Land Management. It is not anticipated that the Project would have any significant adverse land use impacts upon the CDCA Plan or other BLM plans and policies. The land exchange would divest the BLM of its reversionary interest in the 465 acres within portions of the Townsite and proposed landfill for biologically valued lands along the Chuckwalla Bench and within the Salt Creek acquisition area. The Project is consistent with the intensity of uses prescribed for the Project vicinity by the M and I land use classifications and the multiple use class guidelines prescribed in the CDCA Plan.

Under the classification guidelines, the proposed use of the rail and road rights-of-way to serve the Project does not conflict with BLM plans, policies, and programs. Impacts from the use of the existing railroad through desert tortoise habitat in the Chuckwalla Bench is not considered a significant impact. The railroad was an existing use during former mining operations and is part of the proposed Project to haul solid waste into the site.

Metropolitan Water District of Southern California. The MWD Colorado River Aqueduct and pumping station are not expected to be adversely impacted by the Project. The portions of the aqueduct adjacent to the Project site are underground. Those areas that are uncovered are northeast of the Project site. Potential groundwater contamination by any measurable quantity of airborne dust or litter is not considered to be a significant impact, based upon operational procedures incorporated into the Project. Although impacts to the water as a result of airborne dust or litter are not considered to be significant, MWD will provide input to assist in formulating feasible mitigation measures, if needed. MRC and Kaiser signed a MOU with MWD in December 1992 that deals with the development of the landfill.

Summary of Land Use Policy and Plan Impacts. Impacts on the General Plan Goals and Policies mentioned above are not expected to be significant. General Plan consistency would be achieved after amendments to the General Plan are approved, and approvals of the Specific Plans, as proposed, are granted. As a part of the General Plan amendment, the public facilities map would also be amended to indicate the proposed Eagle Mountain Landfill as a landfill site.

Impacts to the existing Townsite regarding biological resources are not considered to be significant. The Townsite has been an existing developed use since the mine began operation. Existing land uses include single-family residences, commercial/industrial buildings, and a correctional facility. After the Project proponent complies with the requirements from the CDFG and the United States Fish and Wildlife Service (USFWS) for a 2081 Game and Management Permit, and a 1603 Stream Bed Alteration Agreement, biological resources would be protected. In addition, the Kaiser/BLM land exchange would also help preserve sensitive biological species by leaving open space land undisturbed, to be managed by the BLM. Section 4.7 and Appendix G of this EIS/EIR have determined that impacts to

biological resources as a result of Project implementation would be insignificant if all mitigation measures were followed.

Concerns about the relationship of existing residential units to the proposed landfill have been noted in the previous pages in Section 4.5.2, Compatibility with Existing Uses. Because existing plans and policies promote: (1) very low residential densities and (2) compatible land uses within and surrounding the Project site, this impact would not be significant in the future, and the findings concerning absence of incompatible land uses could be made, as required, by the CoSWMP.

According to Section 4.11, wilderness is assessed on the basis of resources and as an individual experience of the users. Resource issues deal with individual components, such as air quality, that can be quantitatively assessed. Individual experiences focus on nonquantitative elements such as solitude, for which there are no NPS or BLM guidelines. The existing and proposed NPS and BLM plans for wilderness and recreational uses of the Pinto Basin and Eagle Mountains north and west of the Project site are not anticipated to be impacted significantly by the proposed Project.

Impacts to the Colorado River Aqueduct are not considered to be significant. Contamination by any measurable quantity of airborne dust or litter is not considered likely, based upon operational procedures incorporated into the proposed Project to mitigate impacts.

Mitigation. The proposed Project includes two County General Plan Amendments, two Zone Changes, Development Agreement, Revised Reclamation Plan, two Specific Plans, a tentative tract map, and the BLM/Kaiser land exchange and rights-of-way. Upon Project certification, implementation of mitigation measures in this EIS/EIR, and consistency with agency plans and policies, it is expected that land use impacts resulting from the proposed Project would be reduced to a level of insignificance.

Significance After Mitigation. Impacts on land use plans and policies of the affected agencies are generally not expected to be significant, assuming that all mitigation measures imposed on the proposed Project are followed and that findings of consistency and amendments are implemented.

4.5.4.2 No Action Alternative

Impacts. There would be no landfill activities, and no impacts associated with land uses of the Project would occur under this scenario. Therefore, this alternative would not require any goals, plans, or policies in the Project area to be amended. The County Zoning Ordinance would not have to be amended to reflect the Landfill Specific Plan, but would remain as M-R-A, W-2, N-A.

The Townsite would also remain in its current condition with the correctional facility continuing to operate. The commercial uses proposed in the Townsite Specific Plan would not occur. Residential uses would continue to provide housing for correctional facility

workers and Kaiser employees. No goals, plans, or policies would be affected, and the zoning would remain predominantly W-2 with small areas of C-1.

Mitigation. Because no impacts are expected to occur as a result of this alternative, no mitigation is necessary.

Significance After Mitigation. Implementation of this alternative would not result in a significant impact.

4.5.4.3 Reduced Volume of Onsite Disposal Alternative

Impacts. This alternative is similar to the Project, except that the daily capacity of the landfill would be reduced by approximately 20 percent, which could potentially extend the life of the Project by 20 percent. As with the proposed Project, no significant impacts to Plans and Policies are anticipated under this scenario.

Mitigation. Mitigation measures would be the same as those associated with the Project, but would be extended to last throughout the life of the Project.

Significance After Mitigation. Impacts would be reduced to a level of insignificance after implementation of mitigation measures.

4.5.4.4 Alternate Road Access Alternative

Impacts. Potential impacts to goals, plans, and policies in the Project area would be essentially the same as the proposed Project. The conclusions regarding these potential impacts would not change due to alternate site access.

Mitigation. Mitigation measures would be the same as the proposed Project.

Significance After Mitigation. Impacts would be reduced to below the level of significance.

4.5.4.5 Rail Access Only Alternative

Impacts. Noise, traffic, and air quality impacts associated with refuse hauling by truck would be eliminated. All other potential impacts would remain the same including potential impacts on plans and policies.

Mitigation. Mitigation measures would be the same as the proposed Project.

Significance After Mitigation. Impacts would be reduced to below the level of significance.

4.5.4.6 Landfill on Kaiser Land Only Alternative

Impacts. Under this alternative, the proposed Project would be allowed to occur without exchanging BLM lands within the Project area for biologically sensitive, Kaiser-owned lands offsite. All potential policy impacts would remain the same as the proposed Project.

Mitigation. Mitigation measures would be the same as the proposed Project.

Significance After Mitigation. Impacts would be reduced to below the level of significance.

4.5.4.7 Landfill Development/No Townsite Development Alternative

Impacts. The landfill portion of the Project would be developed as proposed under this alternative, but the provisions in the Townsite Specific Plan would not be implemented. The only difference in potential impacts to land use policies between this alternative and the proposed Project is that no request for a zone change to the specific plan would be made for the Townsite. All other potential policy impacts would remain the same as those for the proposed Project.

Mitigation. Mitigation measures would be the same as the proposed Project.

Significance After Mitigation. Impacts would be reduced to below the level of significance.

4.6 Surface Water Drainage and Flooding

This section presents the standards of significance and the impacts associated with surface water drainage and flooding for the proposed Project and alternatives. Additional information is provided in Appendix F, *Updated Hydrology Report*, of this Environmental Impact Statement/Environmental Impact Report (EIS/EIR). This appendix contains the Drainage Report from the previous EIS/EIR (Bureau of Land Management [BLM] and County of Riverside, Appendix L, 1992) that has been updated to incorporate rain gauge data provided by the Riverside County Flood Control District (RCFCD).

4.6.1 Standards of Significance

The Eagle Mountain area in the vicinity of the proposed Project is subject to flash flooding in the desert alluvial fans and washes. Surface drainage impacts attributable to the Project would be considered significant if the proposed Project alters surface drainage patterns to such an extent so as to result in increased runoff and erosion and in flooding and flood-related hazards. Impacts would also be considered significant if the Project violates the policies of the RCFCD.

4.6.2 Proposed Action

4.6.2.1 Impacts

The total watershed area, in terms of size, would be largely unchanged from pre-Project to post-landfill conditions, and the total flow generated from a given size storm would remain unchanged. The reclamation of the East Pit by the disposal of solid wastes would establish direct drainage patterns consistent with those that existed prior to mining operations. Runoff currently flows into the East Pit and either percolates into the ground or evaporates. Runoff from the proposed Project would flow in a combination of engineered drainage structures and natural drainage courses to the alluvial areas east of the landfill where it would percolate or evaporate.

Landfill. The area east of the landfill site could be affected due to concentrated flows at the northeastern corner of the landfill. These flows could enter the relatively level area to the east of the landfill at higher velocities than specific plan boundary existing conditions. Potential results of these flow patterns include erosion, impacts to plant and animal wildlife, and debris deposition. Similar impacts could result if storm water is concentrated along the southern corner of the landfill.

Approximately 30 years into landfilling operations, storm flows will be diverted to the eastern portion of the East Pit. If the water is conveyed around the landfill, drainage impacts to the area east of the landfill site are possible. These could include flooding, erosion, and debris deposition.

The proposed landfill is required to comply with applicable regulations, including the state (Title 14, CCR, Division 7 and Title 23, CCR, Division 3, Chapter 15) and federal (Resource Conservation and Recovery Act [RCRA] 40 CFR Subtitle D criteria) regulations requiring that the landfill be protected from flooding or washout from a 24-hour, 100-year storm. Also, to comply with RCFCD criteria (see letter dated June 4, 1992 in Appendix F), all drainage structures will be designed to have adequate freeboard to contain a 500-year, 3-hour storm. In addition, state regulations (CCR, Title 23, Chapter 15) require a minimum final slope to facilitate drainage and, therefore, minimize infiltration of water into the landfill and subsequent potential degradation of groundwater quality. The surface water monitoring system will also provide the capability for monitoring the quality of any runoff from the landfill or any surface flow adjacent to the footprint of the landfill. Monitoring and analytical results will allow statistical comparisons with background values to establish whether the landfill is adversely impacting surface water quality. Thus, in addition to meeting the requirements of Article 5, the monitoring system will provide information needed to meet requirements of the federal Clean Water Act, including National Pollutant Discharge Elimination System (NPDES) requirements, for the prevention of discharge of pollutants from a municipal solid waste landfill unit to waters of the United States.

The peak flow rate calculated for the final contours of the landfill could decrease with time as a consequence of settlement. Because the landfill surface will flatten with time, the flow velocity will decrease. Decreased flow velocity means increased time of concentration, which produces a reduced peak flow rate at downstream points.

The potential for significant impacts to the Colorado River Aqueduct to the east of the Project site was also evaluated. The portion of the aqueduct located east of the Landfill Specific Plan boundary lies approximately 1 mile east of the landfill footprint. Most of this section of the aqueduct is completely underground. The Project's surface water design features, which include surface water management facilities to meet both the 500-year, 3-hour and 100-year, 24-hour storm event requirements, in combination with the aqueduct being approximately 1 mile east of the landfill and underground, remove the potential for significant impacts to the aqueduct. Measures to control dust, litter, and ravens discussed in §4.2, 4.4, 4.7, and 4.10 also demonstrate that there are no significant impacts to the aqueduct.

The drainage plan for the landfill incorporates two landfill perimeter drains and an improved drainage system through the Townsite. The plan is to convey upstream drainage past the landfill and Townsite to a point where it can be safely discharged into the natural flow paths downstream. These features are shown in Figure 4.6-1. The southern corner of the landfill is designed outside of and above the 100-year floodplain limits.

Six detention ponds are proposed for the landfill drainage system. These detention ponds would reduce projected peak flows, thus reducing flooding and debris deposition impacts (see Appendix F). Two of the six detention facilities are existing. These are located in the western portion of the landfill along Eagle Creek: one at the mouth of the main confluence and one at the creek neck just downstream of the main confluence (see Figure 4.6-1). All

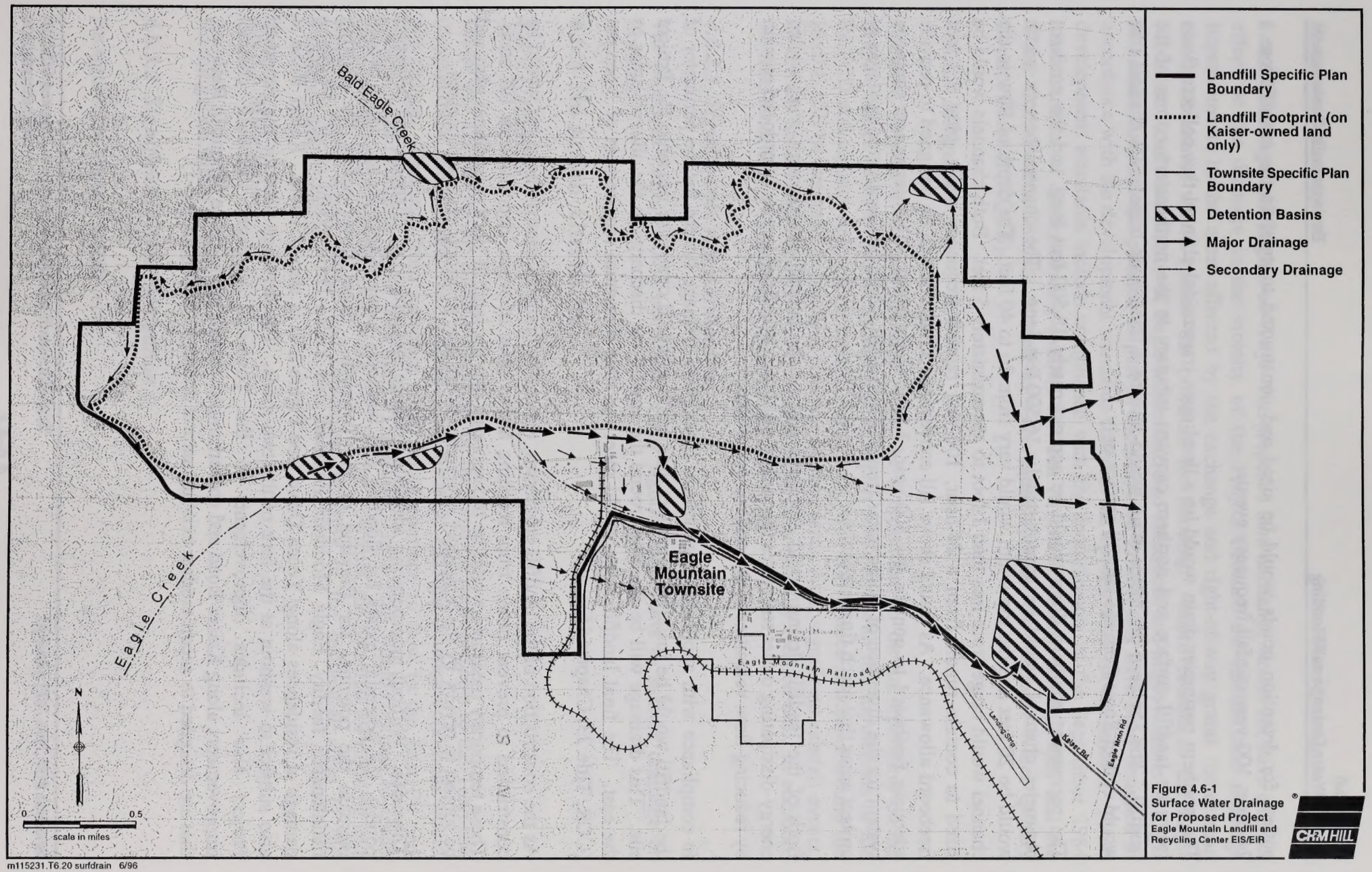


Figure 4.6-1
Surface Water Drainage for Proposed Project
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 surfdrain 6/96

outlets for detention ponds would be sized and constructed to conduct the runoff from a 24-hour, 100-year rainfall frequency event.

The northern perimeter drain would be a lined open trapezoidal channel that collects flows from the landfill surface and northern canyons tributary to the northeastern corner of the landfill. The southern perimeter drain would also be a lined open trapezoidal channel that would collect flows from the landfill surface only.

The permanent southern drain would be approximately 18,500 feet long, and the northern perimeter channel would be approximately 16,500 feet long. The channel bottom width would be 20 feet and the top width would vary from 26 to 40 feet. The depth of flow in the channel would range from less than 1 foot to approximately 5 feet. Both channels would be sized to contain runoff from a 24-hour, 100-year rainfall frequency event, plus a 2-foot freeboard allowance. As stated above, all conveyance structures will be designed to provide adequate freeboard to contain the 500-year, 3-hour storm event. The permanent drainage system for the diversion of storm water from the refuse fill would be constructed in stages to protect areas that reach final elevations.

Both of the landfill drains would discharge east of the landfill site through wing-walled energy-dissipating outlet structures that would result in a beneficial impact of reduced erosion by reducing flow velocities to noneroding conditions.

In compliance with applicable regulations, a complete drainage system for the perimeter of the landfill would be installed to collect drainage that would otherwise run onto the Project site. This drainage will be directed around the landfill for discharge to the alluvial areas to the east. The final landfill slope would meet the state minimum requirement of 3 percent (CCR, Title 23, Chapter 15).

As the construction of the landfill progresses, temporary drainage control measures would be constructed to prevent runon from reaching active areas of waste deposition or fill areas. These temporary measures would be incorporated into the landfill site's operational plan and be subject to review by the regulatory oversight via the state's periodic review processes.

Townsite. Without incorporating adequate drainage measures (i.e., channels and detention ponds), the potential exists for flooding and washouts along Kaiser Road, which would increase the potential for flooding of the Townsite. Sheet flows across the existing maintenance facility, Eagle Mountain Railroad, and Yucca Drive could occur. Flooding damage at residences along Yucca Drive (see Figure 2-7) is also possible. Kaiser Road is also subject to washout at the fork of the two roads. The drainage plan for the proposed Project also includes improvements to the Townsite drainage, including channel improvements along Kaiser Road and culvert improvements along Eagle Mountain Railroad, that are designed to accommodate existing natural drainage (see Figure 4.6-1).

Land Exchange and Rights-of-Way. The proposed land exchange would not have a direct effect on the drainage in the vicinity of the Project because the landfill and drainage improvements in the areas affected by the exchange and right-of-way grants (other than discussed above) would reduce the potential for flooding. Improvements to the Eagle Mountain Road construction of Eagle Mountain Road extension, and improvements to Eagle Mountain Railroad are planned as part of the proposed Project and have been designed in accordance with the development standards stated in the Specific Plan for the landfill. These development standards include compliance with the requirements of the September 1984 Memorandum of Understanding (MOU) between Riverside County, the RCFCD, and the Water Conservation District, as well as with requirements of the Regional Water Quality Control Board (RWQCB).

4.6.2.2 Mitigation

Potential impacts to surface drainage would be avoided due to the incorporation of the Project design features, which include a design plan consistent with the stipulations of the RCFCD and all state and federal landfill regulations. All conveyance structures around the landfill will be designed to handle a 500-year storm event. After significant rainfall events, all ditches and detention ponds will be inspected and periodically cleaned out. In addition, the final landfill slope would be a minimum of 3 percent.

4.6.2.3 Significance After Mitigation

The proposed Project would not result in any significant impacts to surface drainage or flooding.

4.6.3 No Action Alternative

4.6.3.1 Impacts

Under this alternative, the landfill would not be built and no improvements to the Townsite (beyond those already approved) would be implemented. Existing drainage conditions would not change. Drainage from upstream areas would continue to flow to the East Pit and culverts would continue to fill with sand. The Kaiser Truck Trail would continue to erode and portions of the railroad could wash out. For the Townsite, the potential for flooding and washouts along Kaiser Road (and subsequent flooding of the residential areas of the Townsite) would remain.

4.6.3.2 Mitigation

No mitigation would be required.

4.6.3.3 Significance After Mitigation

No significant impacts would occur.

4.6.4 Reduced Volume of Onsite Disposal Alternative

4.6.4.1 Impacts

The proposed drainage impacts of this alternative would be identical to those associated with the proposed Project.

4.6.4.2 Mitigation

No mitigation would be required other than the measures incorporated into the Project design.

4.6.4.3 Significance After Mitigation

No significant impacts to surface drainage or flooding would result.

4.6.5 Alternate Road Access Alternative

4.6.5.1 Impacts

Potential impacts to landfill or Townsite drainage would be essentially the same as the proposed Project. The conclusions regarding these potential impacts would not change as a result of alternate access to the site.

4.6.5.2 Mitigation

Mitigation measures would be the same as the proposed Project.

4.6.5.3 Significance After Mitigation

Impacts would be reduced to below the level of significance.

4.6.6 Rail Access Only Alternative

4.6.6.1 Impacts

The drainage impacts of this alternative would be the same as those associated with the proposed Project. The conclusion regarding these potential impacts would not change as a result of waste transported to the site only by rail.

4.6.6.2 Mitigation

No mitigation would be required other than the measures incorporated into the Project design.

4.6.6.3 Significance After Mitigation

No significant impacts to surface drainage or flooding would result.

4.6.7 Landfill on Kaiser Land Only Alternative

4.6.7.1 Impacts

Under this alternative, the landfill would include only Kaiser-owned lands in and around the East Pit (Phase 5 of landfill development under the proposed Project) for landfill development. The landfill footprint would cover an area of approximately 2,164 acres and would accept a maximum of 10,000 tons per day of waste. The landfill would have a reduced operating life (i.e., approximately 39 years for this alternative versus approximately 100 years for the proposed Project). Implementing this alternative would result in no land exchange between Kaiser and the BLM. The proposed rights-of-way would still be implemented. Landfill design, development, operation, environmental monitoring, and closure and postclosure would be the same as the proposed Project but at a reduced scale.

Although the configuration of the surface water drainage system would change as a result of the revised landfill footprint, drainage would be controlled in a way that is similar to the proposed Project. The proposed drainage for this alternative is shown in Figure 4.6-2. Surface water will be diverted around the landfill using a series of perimeter conveyance ditches and swales. Flows that are potentially erosive will be controlled by using detention basins, energy dissipating outlets, and other means, as required. Flows from Eagle Creek will be redirected away from the East Pit into the drainage channel that is aligned adjacent to Kaiser Road. Flows from Bald Eagle Creek will also be redirected into the drainage channel adjacent to Kaiser Road. A relatively small drainage area located north of the northern boundary of the landfill will drain into a new drainage channel that flows to the east. All surface water flow will eventually be discharged to the east. The Townsite drainage would be identical to the proposed Project.

4.6.7.2 Mitigation

Mitigation measures would be the same as those associated with the proposed Project.

4.6.7.3 Significance After Mitigation

The mitigation measures incorporated into the design for this alternative are comparable to the design measures for the proposed Project but on a reduced scale to accommodate the drainage requirements of the reduced landfill footprint. These design measures would reduce

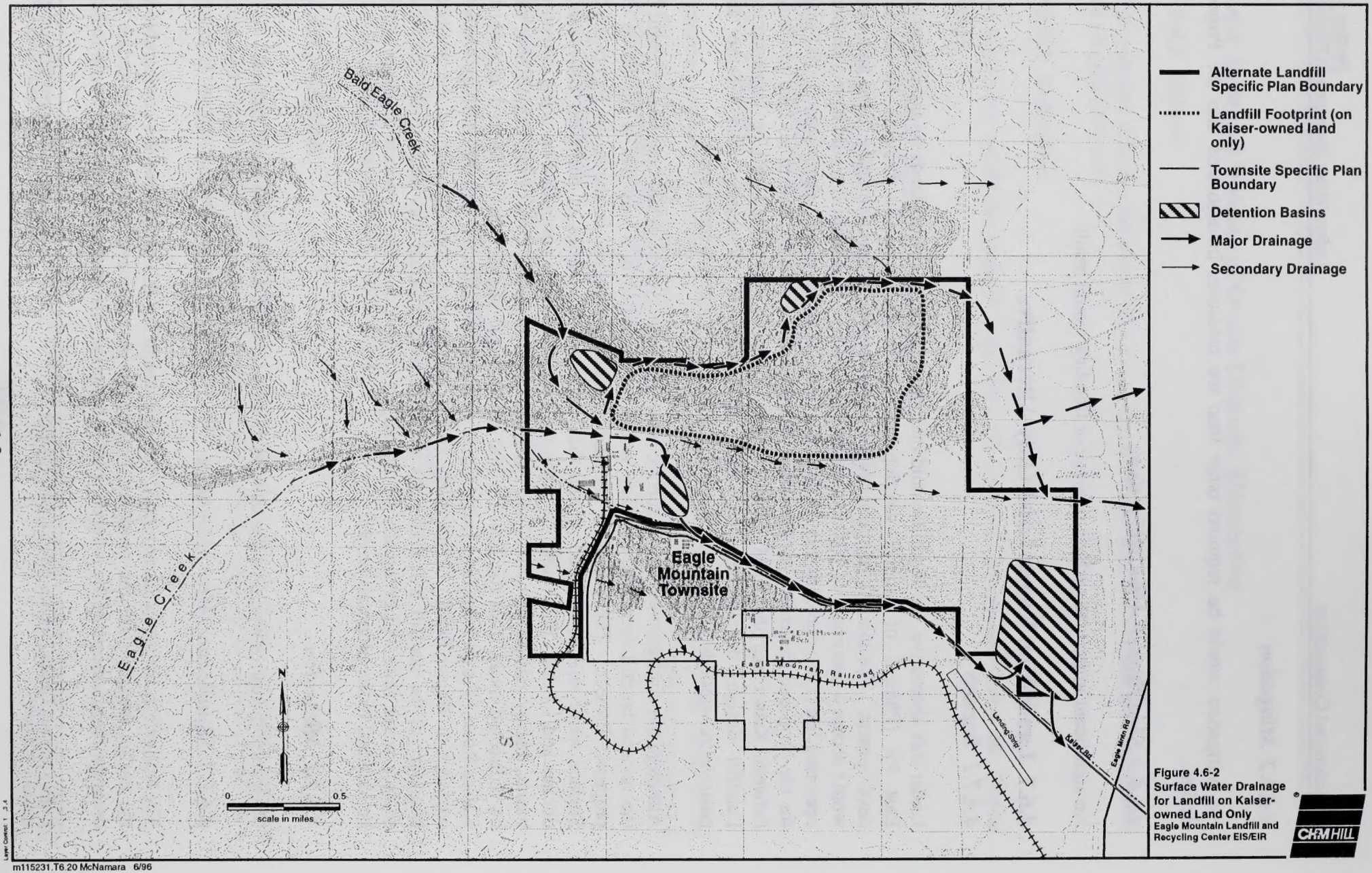


Figure 4.6-2
Surface Water Drainage for Landfill on Kaiser-owned Land Only
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 McNamara 6/96

the potential for surface water drainage and flooding impacts to below the level of significance for this alternative.

4.6.8 Landfill Development/No Townsite Development Alternative

4.6.8.1 Impacts

Under this alternative, the landfill would be constructed but the Townsite renovation would not occur, resulting in fewer residents potentially affected by flooding. The drainage impacts of this alternative would be the same as those associated with the proposed Project because the drainage patterns that existed prior to mining operations would be restored by construction of drainage channels and detention ponds that would prevent flooding of the Townsite and drainage into the East Pit.

4.6.8.2 Mitigation

No mitigation measures would be required other than those incorporated into the Project design.

4.6.8.3 Significance After Mitigation

No significant impacts would occur.

4.7 Biological Resources

This section addresses the environmental consequences of implementing the proposed Project and alternatives for biological resources located in the vicinity of the Project (i.e., the landfill site, Townsite, the area adjacent to the access road(s), and along the Eagle Mountain Railroad and in the region of the Project). Two Section 7 consultations have previously resulted in "no jeopardy" options for the desert tortoise and pupfish. This section updates biological resource information and addresses impacts and the effectiveness of proposed mitigation.

4.7.1 Standards of Significance

Significance criteria were developed to assess impacts based on guidance provided by CEQA and NEPA. Use of these criteria to evaluate impacts is based on RECON's technical report for the previous EIS/EIR (BLM and County of Riverside, 1992); information obtained from 1995 field surveys; and the judgment of professional biologists.

Impacts are considered significant, as defined by CEQA, if one or more of the following criteria are met:

- The action substantially affects a rare or endangered species of animal or plant or the habitat of the species (CEQA Statutes and Guidelines, Appendix G, 1992) and/or the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973 (NEPA Regulations, 40 CFR § 1508.27).

- The action interferes substantially with the movement of any resident or migratory fish or wildlife species (CEQA Statutes and Guidelines, Appendix G, 1992).

- The action substantially diminishes habitat for fish, wildlife, or plants (CEQA Statutes and Guidelines, Appendix G, 1992).

- The action substantially degrades water quality or substantially degrades or depletes groundwater resources (CEQA Statutes and Guidelines, Appendix G, 1992).

For purposes of this analysis, "interfere substantially," "substantially diminish habitat," and "substantially degrade," respectively, are defined as changes in conditions sufficient to jeopardize the long-term persistence of the resource in question.

4.7.2 San Diego Superior Court Ruling on Previous EIR

In response to legal actions challenging the County's certification of the previous EIR (see Section 1.2.1), the San Diego County Superior Court issued a Statement of Decision in 1994 ruling that there was not substantial evidence in the EIR to support the conclusion that mitigation measures would be effective in reducing risk to the desert tortoise. The Court

ruled that the desert tortoise could be endangered in many ways; the specific potential impacts noted in the Statement of Decision are impacts attributable to trains, truck traffic, and ravens attracted to the landfill. In addition, the Court cited the Townsite repopulation as having potential impacts on the desert tortoise. The Court also directed that the effectiveness of tortoise mitigation measures and the potential impacts to the tortoise within JTNP be more fully addressed.

4.7.3 Proposed Action

4.7.3.1 Impacts to Vegetation

Approximately 1,038 acres of the Sonoran creosote bush scrub, desert dry wash woodland, and mixed desert dry wash woodland/creosote bush scrub communities occurring in canyons that are included in the landfill footprint and in the area of construction of the Eagle Mountain Railroad spur will be lost through Project implementation. These plant communities are common in the Project vicinity and are distributed extensively throughout the Mojave and Colorado Deserts. The value of this acreage as habitat for some wildlife species is limited by its proximity to the existing, highly disturbed area of the mine. Loss of this acreage is considered not significant because these plant community types are regionally ubiquitous.

Special-Status Plant Species

Alverson's Foxtail Cactus

Two large concentrations of this cactus that occur on the landfill site would be affected by the Project. The southern part of the proposed storage area would destroy 165 acres of habitat and at least 80 individual plants. Another 125 acres, that includes at least 200 plants along the southwestern edge of the landfill footprint in the Eagle Creek Wash would be destroyed by the Eagle Mountain Road extension. Additionally, approximately 33.3 acres of habitat for this species supporting an unknown number of individuals would be lost to access road improvements. The loss of at least 280 individuals of this species, which has a limited distribution in the region, could affect local population persistence and would incrementally add to the loss of this species regionally. This loss is considered a significant adverse impact.

California Barrel Cactus

At least 800 California barrel cactus were identified within the boundaries of the specific plan for the landfill and located along access road improvements areas. Approximately 200 of these individuals would be protected by natural open space surrounding the landfill site. The remaining 600 would be lost in development of the landfill site. Some plants could also be lost in maintenance of the Eagle Mountain Railroad. California barrel cactus is extensively distributed in the Mojave Desert and in the vicinity of the Project. The loss of approximately 600 individuals is not expected to affect persistence of the local or regional population. This loss is considered not significant.

Orocopia Sage

This species occurs in several areas along the Eagle Mountain Railroad, and individuals could be damaged or destroyed during Eagle Mountain Railroad maintenance. Loss or damage of a few individuals is not considered sufficient to jeopardize the persistence of the local or regional populations. This loss is considered not significant.

4.7.3.2 Impacts to Wildlife

Loss of 1,038 acres of Sonoran creosote bush scrub and other plant communities at the landfill site, at the Eagle Mountain Railroad spur, and for access road enhancements would slightly reduce habitat availability for an array of common wildlife species in the Project area. Although habitat in the immediate vicinity of the Project would be reduced, habitat acquired and protected through the land exchange and the Environmental Mitigation Trust is a beneficial impact of the Project expected to result in a net gain of protected habitat in the Project area. Loss of this acreage in the Project area is not expected to affect persistence of populations of common wildlife species in the area and is considered not significant.

Other impacts to common wildlife species include direct mortality of individuals during construction and operation of the Project, displacement of individuals to surrounding habitat areas from habitat in the Project area, disturbance during construction of Project features and Project operation, and direct mortality of individuals during Project operation, including rail and vehicle traffic. Changes in the number and relative abundance of some wildlife species might occur in the immediate vicinity of the landfill. None of these changes is expected to affect the persistence of local or regional populations of common wildlife species and impacts are considered not significant.

Special-Status Wildlife Species—Fish

Desert Pupfish

The previous EIS/EIR and the initial and updated Biological Opinions (USFWS, 1992 and 1993) prepared for the proposed Project include the following potential impacts to desert pupfish:

- Potential loss of individual desert pupfish habitat and loss of less than one acre of degraded habitat from a rail accident or major construction of a trestle over pupfish habitat in Salt Creek

- Potential impacts to water quality and possible direct kills of fish using habitat under the trestle during maintenance or construction activities

Additionally, at scoping meetings for this EIS/EIR, questions were raised about potential effects on the water supply in Salt Creek resulting from the use of groundwater at the landfill

site, which is located approximately 30 miles north of the Creek. Flow in Salt Creek is not dependent on groundwater from the Chuckwalla Basin (i.e., groundwater that could be affected by the proposed Project (see Section 4.1). Groundwater use associated with the proposed Project would not alter the water level in Salt Creek and, therefore, would not degrade habitat for the desert pupfish. Salt Creek drains the Orocopia, Chocolate, and Chuckwalla Mountains. Groundwater for operation of the landfill would be obtained from the Chuckwalla Valley, which is north of the Chuckwalla Mountains. Use of groundwater for landfill operations would not, therefore, affect Salt Creek or the desert pupfish population.

The proposed Project includes the use of specially designed rail cars to prevent waste from escaping the rail cars and being deposited into Salt Creek as it is transported to the landfill site. Additionally, MRC's Memorandum of Understanding with CDFG and the 2081 Permit, include similar provisions to prevent contamination of Salt Creek or other degradation of pupfish habitat from Eagle Mountain Railroad operation or Eagle Mountain Railroad maintenance. The Biological Opinion also concluded that with prescribed measures, no significant adverse impacts are expected. No impacts to this species are expected from waste in the creek or degradation associated with operation or maintenance of the Eagle Mountain Railroad.

A rail accident could result in habitat loss or degradation that could result in mortality of individual pupfish or loss of the local population. If this were to occur, the loss would constitute a "take" of pupfish in violation of the Biological Opinion (USFWS, 1992) and would be in violation of the California ESA (CESA). A take of pupfish would be considered a significant adverse impact.

Special-Status Wildlife Species—Reptiles

Common Chuckwalla

Approximately 1,038 acres of undisturbed potential habitat for common chuckwalla will be lost in the development of the landfill. Chuckwalla population size and density in the vicinity of the Project varies widely from year to year in response to variations in rainfall and related habitat conditions. A study conducted in the Project area (Abts, 1987) indicated that average chuckwalla population density ranged from 0.15 to 4.80 adults per acre over the 7-year period evaluated. Based on this range of average density estimates, a loss of 1,038 acres of potentially occupied habitat could result in an estimated loss of 156 to 4,982 individuals from the local population over the life of the Project. (Actual numbers would be lower or higher than these estimates, which are based on average densities). Habitat loss that occurs 1 or 2 years following a year with favorable environmental conditions (i.e., mild winter followed by a summer with rainfall) would result in loss of more individuals than habitat loss that occurs following a year of unfavorable conditions (i.e., more severe winter followed by a summer with no rainfall). However, loss of individuals during a period when population size is already reduced because of unfavorable conditions could reduce the chance that the population would persist through unfavorable conditions and would rebound when favorable conditions occurred, potentially resulting in the loss of the local population. This loss and the

loss of a larger number of individuals if habitat loss occurs when population density is high, would constitute a significant adverse impact.

Flat-tailed Horned Lizard

The range of this species overlaps with the Project area only at the southern terminus of the Eagle Mountain Railroad. No individuals or sign of the species were identified in field surveys. The BLM has concurred that the flat-tailed horned lizard will not be adversely affected by the proposed Project (Personal communication, Kathy Freas/CH2M HILL with Joan Oxendine/BLM, January 23, 1996). Because the Project site does not support suitable habitat, no impacts are anticipated.

Desert Tortoise

Earlier environmental documentation; (RECON, 1991; BLM, 1993; BLM and County of Riverside, 1992) identified the following potential impacts to desert tortoises:

- During track maintenance and repair, tortoise burrows located along the railroad berm could be collapsed and destroyed. Any tortoises occupying these burrows could be killed, and loss of unoccupied burrows could be a temporary loss of shelter for tortoises in the area.

- Tortoises could be killed or injured by trains after rail service to the landfill site begins. The berm and rail could constitute a partial barrier to tortoises, but tortoises and sign have been found on the tracks (RECON, 1991; RECON, 1994a), suggesting that animals might move across the Eagle Mountain Railroad.

- Tortoises occupying habitat directly adjacent to the Eagle Mountain Railroad could experience increased stress from noise and vibration from passing trains. A previously prepared technical report (RECON, 1991) gives a detailed account of research into the potential for permanent hearing loss in tortoises from train noise. The likelihood of such loss is considered low (RECON, 1991).

- Activating the Eagle Mountain Railroad could create a barrier to movement of tortoises between the eastern and western portions of their current local range. Consequently, reproduction and exchange of genetic material between tortoise subpopulations on either side of the track could be reduced. Considering tortoise densities in the area and the quantity of available habitat, the isolation of desert tortoise subpopulations east and west of the Eagle Mountain Railroad and the threat of long-term loss of population viability would constitute a significant adverse impact (RECON, 1991).

- Improvements to access roads would result in a loss of up to 150 acres of desert tortoise habitat, and increased traffic in the form of trucks associated with landfill

operation, transport of waste to the landfill site, and traffic associated with activity at the Townsite could result in tortoise mortality from collisions with vehicles.

- Illegal collecting of tortoises could result from increased human activity in the Project area.

- Increases in off-highway vehicle use could occur causing degradation of tortoise habitat and direct mortality from crushing, and subsequent burrow collapse.

- Possible release of captive tortoises infected with Upper Respiratory Tract Disease into the wild population could result from increased human activity in the area.

- Changes in surface water flow patterns could result in a drainage pattern that more closely resembles the original hydrology of the area, before the Eagle Mountain Mine became active. These changes could result in occasional flash flooding of tortoise habitat immediately east of the mine site during storm events. Previous studies (RECON, 1992) state that because few or no tortoises occupy the area, and because flash flooding is a "natural occurrence in tortoise habitat," impacts from changes in water drainage patterns are not expected to be significant.

- An increase in the local Common Raven population could result from increased food availability at the landfill, and could increase predation on young tortoises by ravens. This effect could extend to tortoise populations within Joshua Tree National Park (RECON, 1991). Additionally, an increase in road kills of local wildlife species would likely result from the projected 12- to 16-hour per day truck traffic along access roads. Common Raven and other scavenger populations could increase in response to increased food in the form of road-killed animals. Higher populations of predators could result in increased desert tortoise mortality from juvenile predation.

Common Raven is a known predator of juvenile desert tortoises. Populations of tortoises in California show trends consistent with the hypothesis that "raven predation [has] significantly reduced the number of juveniles present in the population, hence reducing the number of animals eventually available for recruitment into the population of breeding adults...Reduced recruitment could be a major conservation concern for long-lived turtle species" (Berry, 1985 and 1990, cited in Boarman, 1993). Ravens are also notorious raiders of nests (Knight and Call undated), and could affect many species, including sensitive bird species such as Eagle Mountain Scrub Jay (RECON, 1991). Remains of common chuckwalla have been found at raven nests (Boarman and Berry, in press). Actions that would increase local raven populations are considered a potential impact to desert tortoises and other prey species, although some authors consider that ravens that forage regularly at landfills and other highly concentrated food sources might infrequently leave these sources to prey on native wildlife (Engel and Young, 1992).

Populations of Common Ravens have increased in the deserts of California in recent years. Between 1968 and 1993, data from Breeding Bird Surveys show 7,600 percent increases in

Common Raven in the Central Valley, 1,400 percent in the Sonoran-Colorado Desert, and 1,000 percent in Mojave Desert. (Boarman and Berry, in press). Increased sightings have been primarily in areas of human development, including landfills, highways, power lines, etc. (FaunaWest Wildlife Consultants, 1989; Knight and Kawashima, 1993; Knight, Knight, and Camp, 1993). Knowles and Berry (1989) found that "landfills constituted the major concentration areas" in their study of four regions in California deserts. Common Ravens are considered to be "subsidized predators," because populations and range have increased as food, water, perch, and nest sites have increased in California deserts as a result of human development (Boarman, 1993 and in press).

Ravens at landfills have been found to "eat organic materials exposed along the active face of landfills, and landfill operators report that ravens readily dig up food that is covered by 15 centimeters (cm) [6 inches] of dirt cover" and that the birds make use of available water at landfill sites (Boarman and Camp, in preparation). This is an anecdotal observation and the in-preparation paper by Boarman and Camp does not comment on whether raven control measures were in place to discourage ravens from the landfill site addressed in their paper. Common Ravens have been observed (FaunaWest, 1989) foraging at landfills in the following ways: (1) exposing downslope and previously buried refuse at downslope operations by using their beaks to probe a few inches below the surface, (2) breaking open trash bags and removing organic materials from the bags, (3) feeding on uncovered refuse at landfills where trash was buried on a daily or weekly basis, and (4) feeding on trash as it was being dumped.

Sewage ponds and dump sites, often located at landfill sites, were also used as a food source; and birds were seen following behind trains near Nipton and Kelso possibly feeding on spilled grain or foraging for railroad kills (FaunaWest, 1989). It has also been observed that Common Ravens preferred large, flat, cleared areas, often found within landfills, for daytime, communal roosting sites (FaunaWest, 1989). Ravens have been observed congregating in bare areas recently cleared by construction machinery, feeding on lizards, small mammals, and other animals injured or killed during vegetation clearing (LaRue, personal observation, 1993).

The area around Desert Center and near the existing Desert Center Sanitary landfill currently shows inflated numbers of Common Ravens compared to surrounding desert areas (FaunaWest Wildlife Consultants, 1989). The Desert Center Landfill is covered twice per week, and does not have personnel onsite during all active disposal hours ward off ravens. Common Raven densities in native desert scrub habitat distant from roads in the Pinto Basin and the Eagle Mountains of JTNP and BLM "wilderness and natural lands" were 4.63 per 100 linear kilometers (km) surveyed (Camp et al., 1993) compared to estimates of 36.5 ravens per 100 km and 73.5 ravens per 100 linear km in other places in the Mojave Desert (Knight and Kawashima, 1993). Numbers of ravens observed at landfills were not necessarily in proportion to the size of the landfill. Landfill management, such as frequency and type of garbage burial, appeared to influence numbers. Relatively low mean counts were obtained at the Barstow and Indio Landfills that served large human populations. Landfills of similar size at Ridgecrest, Victorville, and Apple Valley had much higher counts. Moderate-

sized landfills, such as at Baker, Desert Center, and Newberry Springs had high counts despite smaller size (FaunaWest, 1989).

Scoping meetings for this EIS/EIR with state and federal agencies, other concerned organizations, and individuals identified the following potential impacts:

- Potential for fire created by reactivating the Eagle Mountain Railroad could result in tortoise mortality and loss or degradation of habitat.

- Loss of tortoises and tortoise-occupied habitat could occur south and east of the proposed landfill footprint. RECON (1991) found a small amount of tortoise sign just south of the landfill in the area where the Eagle Mountain Railroad makes a large loop back towards the southwest; 1995 surveys identified additional tortoise signs in this area. Tortoises also were found immediately east and north of existing mine tailings on the eastern portions of the existing mine, in areas just east of the proposed Phase 4 of the landfill. If tortoises are still present east of the footprint, development of the eastern and northeastern portions of Phase 4, anticipated in approximately 70 years, could result in the loss of tortoises and possible occupied habitat.

- Additional Spring 1996 surveys found evidence of tortoises in the tailings pond areas. About 10.9 acres of this area will be affected by project activities and require mitigation.

Direct loss of individual adult or juvenile animals in excess of one animal per year, as specified in the Biological Opinion (USFWS, 1992), reduction in reproductive success in desert tortoise populations, loss of habitat for the tortoise in the immediate vicinity of the Project site, and increase in juvenile tortoise mortality from increased predator populations in JTNP could occur as a result of one or more of the potential effects listed above. This loss would be considered a significant adverse impact.

Special-Status Wildlife Species—Birds

Northern Harrier, Sharp-shinned Hawk, Cooper's Hawk, Golden Eagle, and Prairie Falcon

Loss of 1,038 acres of foraging habitat for these species would result at the landfill site and from access road improvements and construction of the rail spur. This habitat constitutes a very small proportion of foraging habitat used by these species in the region. Sufficient foraging habitat would remain in the Project region following the loss of this habitat. No significant impacts on these species from the proposed Project are anticipated.

Swainson's Hawk

Swainson's Hawk has a low likelihood of occurrence in all Project areas, but individuals could incidentally forage in the vicinity of the Project during migration. Habitat surrounding

the Project area provides substantial foraging habitat for the species. No significant impacts to this species are expected from the proposed Project.

Peregrine Falcon

This species has a low likelihood of occurrence during migration on the landfill site and along access roads, and a moderate likelihood of occurrence during migration along the southern portion of the Eagle Mountain Railroad, where the species occasionally is observed in wetland areas near the Salton Sea. The proposed Project would not affect areas where these individuals have been observed foraging, and no impacts to this species are anticipated.

California Black Rail and Yuma Clapper Rail

Wetland habitat that occurs along the Eagle Mountain Railroad is not sufficiently large to support California Black Rail or Yuma Clapper Rail, thus the birds are not expected to occur in the Project area. No impacts to these species area expected from the proposed Project.

Western Burrowing Owl

Western Burrowing Owl was not identified during the 1989-1990 or 1995 foot surveys for desert tortoise. The species is resident rather than migratory in the Project vicinity; therefore, examination of burrows during desert tortoise surveys, even though conducted outside the breeding season for the bird, are considered to be sufficient to detect Western Burrowing Owls if they are present. The species could occur in the Project area. No significant impacts to this species are anticipated from the proposed Project because no burrowing owls were detected during the many surveys of the Project area (based on field surveys).

Eagle Mountain Scrub Jay

No direct impacts to Eagle Mountain Scrub Jays are expected because this species inhabits pinyon-juniper and scrub oak woodland at least 18 miles from the landfill site. The previous EIS/EIR (BLM and County of Riverside, 1992) and other studies (RECON, 1991; 1992) identify potential increases in the raven population and consequent higher rates of raven predation on nestling scrub jays as a possible impact. If increased Common Raven populations resulted in increased nest predation on this species, loss of individuals and reduced reproductive success would be considered a significant adverse impact because of the restricted distribution of this race. The likelihood of this effect is remote given the raven control measures to be instituted at the Project site and the distance from the landfill to the scrub jay population. No impacts to this species are expected.

Black-tailed Gnatcatcher

Black-tailed Gnatcatchers were observed along the Eagle Mountain Railroad, adjacent to Eagle Mountain Road, and on the landfill site. Suitable and occupied habitat for the species

would be lost from the landfill site and access road, and may occur during rail line construction and maintenance.

The species is found throughout the eastern two-thirds of San Bernardino, Riverside, and Imperial Counties. Loss of habitat from along the access road and landfill is not considered to "substantially diminish habitat" for this species. Loss of this habitat is not considered to be significant.

LeConte's Thrasher

Potential nesting habitat for LeConte's Thrasher would be reduced by approximately 1,038 acres in the area surrounding the landfill site and along the Eagle Mountain Railroad. Increased human activity in the vicinity of nesting habitat that is not directly removed would greatly reduce its value for this species, which is very sensitive to human disturbance. Significant areas of habitat for this species remain in undisturbed areas in the Project vicinity. Loss of habitat in the Project vicinity is not expected to affect the persistence of the local or regional population. This loss of habitat is not considered significant. The potential loss of LeConte Thrasher nesting habitat associated with implementation of the proposed Project is not considered to constitute a significant impact because, from a regional perspective, this loss is not expected to result in a threat to the long-term persistence or viability of the population. In addition, the planned purchase of additional habitat acreage using Environmental Mitigation Trust monies would further reduce any potential jeopardy to the long-term persistence of the population.

Loggerhead Shrike

Potential foraging habitat for Loggerhead Shrike would be slightly reduced from development of the landfill site, access road improvements, and Eagle Mountain Railroad spur construction. This habitat is a very small proportion of total foraging habitat available to individuals in the local population. No significant impacts to this species are expected from the proposed Project.

Yellow Warbler and Yellow-breasted Chat

Migrating individuals of these species were observed in the vicinity of the proposed Project, but use is expected to be infrequent. A small amount of desert dry wash woodland could be lost through the development of the landfill and improvements to the access roads, but this loss is expected to be minor in comparison to their distribution in the region of the Project and would not affect these migratory species during the migration periods. No impacts to these species are expected.

Special-Status Wildlife Species—Mammals

California Leaf-nosed Bat

Disturbance associated with landfill activities, possible loss of the artificially created ponds around the site, loss of the cylindrical building, and potential loss after approximately 35 years of landfill operation of the Kaiser mine adit at the landfill site would likely result in destruction of roosting and foraging habitat at the landfill site by this species. Disturbance associated with minor activities at the landfill site appears to have resulted in mortality of several individuals of California leaf-nosed bat and could have contributed to the decline in numbers of this species reported by Brown (1993) at the adit between 1990 and 1993. The Kaiser adit is the only known winter roost for the California leaf-nosed bat in the Eagle Mountains (Brown, 1993). The species requires warm mine sites to survive winter temperatures. Only approximately 10 mine sites in Southern California provide winter roosts for this species (Brown as cited in RECON, 1992). Bat populations have been declining in other parts of Southern California as well. Loss of one of 10 winter roosts for this species in the region could result in loss of the local population of California leaf-nosed bat and would contribute to the regional decline of this species. This loss would be considered a significant adverse impact of the proposed Project on the local and regional population.

Townsend's Big-eared Bat

Sign indicating the possibility of a maternity roost of this species was identified at the Kaiser mine adit in 1990 (Brown, 1990). Although no sign of this species was observed during several subsequent surveys, loss of a potential maternity roost for this species, which is very sensitive to human disturbance, could contribute to the decline in the local and regional population of this species. The loss of the Kaiser mine adit for a maternity roost for Townsend's big-eared bat would be considered a significant adverse impact of the proposed Project.

Pallid Bat

Loss of the two existing watering holes on the Kaiser property would reduce available foraging habitat for the pallid bat in the vicinity of the proposed Project. Loss of this seasonal foraging habitat, however, is not expected to significantly reduce the foraging habitat for the species in the vicinity of the Project and is therefore not considered a significant adverse impact.

Nelson's Bighorn Sheep

Previous studies (RECON, 1991; 1992; BLM and County of Riverside, 1992) identified several impacts to bighorn sheep from the implementation of the Project. These include:

- Loss of four water sources that are critical to the local population of Nelson's bighorn sheep: the pond at the bottom of the East Pit; two leaking water tanks on the south-

central part of the landfill site; and a temporary water source at the northeast corner of the mine. (The number of water sources is now two, because the pond at the bottom of the East Pit and the temporary source at the northeast corner of the mine no longer exist).

- The loss of approximately 330 acres of high quality, occupied Nelson's bighorn sheep habitat, including possible lambing areas from the landfill site could force the existing population to use a smaller area, potentially stressing animals by crowding.

- Increased noise and other human activity could create stressful conditions potentially predisposing sheep that currently occupy areas of the landfill site to disease.

- Increased residential use in the Townsite could affect bighorn sheep, through increased disturbance from humans and their domestic animals, as well as increased potential for poaching.

- Along the Eagle Mountain Railroad, individual animals could be lost to train kill. Habitats and bighorn sheep populations in the Orocopia and Chocolate Mountains might be fragmented where movement corridors are crossed by the reactivated Eagle Mountain Railroad, which could result in population fragmentation. The Biological Assessment prepared in 1992 by RECON states that there is no evidence that sheep movement between mountain ranges was halted during previous operations.

The loss of two watering holes would eliminate the primary source of water for the local population of Nelson's bighorn sheep and would likely reduce or eliminate the population in the immediate vicinity of the landfill as a result of direct mortality or relocation. Animals forced to relocate would likely suffer stress that could increase the chance of disease or predation. Loss of individuals from the local population is considered a significant adverse impact on the local population. Loss of 330 acres of sheep habitat at the landfill site is not likely to affect the local population, which will likely leave the area when water becomes unavailable. Loss of this 330 acres is not likely to increase crowding of this species or cause associated stress. Therefore, the loss of the 330 acres of sheep habitat is not considered significant because of the extensive area over which the population currently ranges. If activation of the Eagle Mountain Railroad disrupts sheep movement between the Orocopia and Chocolate Mountains, this disruption would be considered a significant adverse impact under CEQA. The landfill footprint area is not believed to be utilized as a high quality lambing area (Personal Communication, Kathy Freas/CH2M HILL, with C. Douglas, January 31, 1996).

American Badger

Some habitat suitable for badgers will be lost in the development of the landfill and road improvements. Any burrows of badgers present along the Eagle Mountain Railroad would be subject to greater noise and vibration, and could collapse. The potential for road kill or train kill of badgers would be increased with the operation of the landfill. Badgers present in the

vicinity of the proposed Project could be subject to greater levels of stress as a result of increased noise, vibration, and human activity.

Sufficient suitable habitat exists in the vicinity of the Project to support displaced individuals. Loss of individuals to occasional vehicle collisions is not expected to affect persistence of the local or regional population. Impacts to this species in the Project area are not considered to be significant.

4.7.3.3 Mitigation

General Protection Measures of the Proposed Action

Various measures intended to mitigate potential impacts to wildlife from Project implementation are included in the following existing environmental documents issued for the proposed landfill:

- California 2081 Management Agreement for the incidental take of desert tortoise and desert pupfish (CDFG, 1994b)
- California 1603 Streambed Alteration Agreement (CDFG, 1994c)
- Section 7 consultation authorizing the incidental take of desert tortoises and desert pupfish (USFWS, 1992 and 1993)
- MOU among MRC, CDFG, and NPS relative to bighorn sheep (NPS, 1992) (The MOU was negotiated among agencies but not signed)
- Memorandum from the Army Corps of Engineers (Department of the Army, 1994) indicating that the Project would be covered by Nationwide Section 404 Permit

The Proposed Action includes certain inherent measures associated with the Project that would protect or enhance biological resources in the vicinity of the proposed Project. These measures are identified in the CDFG Section 2081 Agreement between MRC and the CDFG. The first protection/enhancement measure inherent in the Proposed Action is a land exchange in which 3,481 acres of mostly disturbed BLM mining lands would be conveyed to Kaiser in exchange for 2,486 acres of high quality habitat for desert tortoise, desert pupfish, and other plant and wildlife species to be conveyed to the BLM. The offered lands are not intended to be direct replacement or mitigation for habitat lost as a result of the Project. The land exchange is proposed to, among other factors, promote the consolidation of federal ownership of environmentally sensitive lands and support the BLM's efforts to promote biodiversity. Although the value of these lands as habitat is not intended as direct mitigation for Project-related impacts, the lands do contain high quality habitat.

In addition to the inherent protection measures associated with the land exchange, specific mitigation measures separate from the land exchange are included in the terms and conditions

of the USFWS Biological Opinion. Kaiser will also convey to the BLM 375 acres intended as direct mitigation for loss of 150 acres of desert tortoise habitat from Project implementation—a 2.5 to 1 ratio of exchange. These lands are in addition to those acres covered by the land exchange. Transfer of this high quality habitat to the BLM provides for long-term protection and management of this habitat for special-status species and consolidates public lands, thus enhancing management of tortoise habitat (CDFG, 1994b) and is a significant beneficial impact of the proposed Project.

The second measure discussed in the Section 2081 Agreement is the payment of a sum not to exceed $45,000 by MRC to the University of California to construct a pool to accommodate an experimental population of the Salt Creek pupfish at the Deep Canyon Reserve. This amount will be provided initially and credited against the trust fund. The contribution to establishing an experimental population of desert pupfish would assist in providing information on this species that could contribute to its conservation. Any experimental population developed could serve as an offsite, artificial refugium for the species that could be used to repopulate Salt Creek, if the local population is lost for any reason.

The third measure provides that MRC should pay to the County of Riverside a mitigation fee of $1.00 per ton of waste disposed of at the landfill facility for the life of the Project. This fee would be used by the County according to terms included in an Environmental Mitigation Trust. A majority of these collected fees (approximately 85 percent of collected fees or $6 million per year) would be used to acquire lands that provide high quality habitat for special-status species in the region. This represents one of the most extensive habitat purchase measures in the country. In addition, the lands purchased under the Trust would provide protection for a greater number of species (i.e., not just endangered and threatened, but also sensitive species). These lands have been identified by a team composed of representatives from the BLM, NPS, and the USFWS.

The remaining 15 percent of fees would be used to study and monitor the effects of the landfill and provide operating funds for lands that are acquired. Monitoring the effects of the landfill is important for assessing whether potential impacts identified in this EIS/EIR become actual significant adverse impacts during the operation of the landfill. Monitoring would provide guidance regarding adjustment of landfill operation to avoid, reduce, or mitigate those impacts, if they were to occur. The acquisition and long-term protection and management of valuable habitat in the vicinity of the Project that might be developed, degraded, fragmented, or otherwise reduced in value for biological resources is a significant beneficial impact of the proposed Project.

The Environmental Mitigation Trust will be administered by the County of Riverside Board of Supervisors. A committee, comprising state and federal agency representatives as well as environmental groups, will recommend the amount and suitability of lands to be purchased. Based on the projected funds available over the life of the landfill, the potential mitigation funds would enable land purchases several times greater than the actual lands affected. The potential impacts are therefore deemed to be adequately mitigated, with monitoring mechanisms by the Review Board and the County to ensure implementation.

Specific Mitigation Measures—Special-Status Plant Species

Two federal Category 2 species, one BLM-sensitive, and two CNPS-designated special status plant species were identified during survey in fall 1989 and 1990, and February 1995. A number of other species could occur in some portions of the Project. These include Utah vineweed, California ditaxis, Thurber's pilostyles, Las animals colubrina, spearleaf, mesquite nestraw, ribbed cryptantha, winged cryptantha, salton milkvetch, sand-flat locoweed, borrego milkvetch, cove's senna, Parish's desert-thorn (see Table 3.1). To minimize the potential for Project-related adverse impacts to these species if they were to occur on the Project site, the following mitigation measures would be implemented:

- Using a qualified biologist, MRC would evaluate the proposed Eagle Mountain Railroad repair and maintenance areas for the presence of sensitive plant species during conduct of preconstruction surveys for desert tortoise and other wildlife species in these areas. The designated biologist would be familiar with and knowledgeable about the growing season(s) for these species and be able to recognize them. If sensitive plant species were to be found during these surveys, appropriate measures would be implemented to avoid or minimize the effects on these species, where possible.

Alverson's Foxtail Cactus

Mitigation for the loss of individuals and habitat acreage for this species would include the following measures:

- Prior to ground disturbance, the number of plants per acre would be determined; and soils analyses would be conducted at current sites and potential transplant sites to assess compatibility.

- Approximately 10 to 15 percent of the cacti present would be used in the trial transplant effort.

- Sites selected for the main transplant effort would be planted with the remaining individuals salvaged from the impacted areas of the proposed Project at a density similar to that estimated for the natural population.

- Final mitigation areas would be monitored once a month for one growing season to measure survivorship and determine transplant program success.

- A final report, summarizing the effort, would be prepared and submitted to the BLM, CDFG, and NPS.

- During rail maintenance and repair activities, staging and storage areas would be selected based on preconstruction surveys and in cooperation with the construction supervisor to avoid impacts to Alverson's foxtail cactus to the degree possible.

- The Alverson's foxtail cactus transplantation program would begin at least one year prior to impacting the cactus population, to allow sufficient time to move the large number of cacti during the proper growing season (per RECON, 1995).

California Barrel Cactus

No specific mitigation measures are proposed.

Orocopia Sage

Although impacts to Orocopia sage are not considered to be significant, the following mitigation measures, identified in the previous EIS/EIR (BLM and Riverside County, 1992), are proposed:

- Prior to construction activities in the vicinity of Orocopia sage populations, an onsite meeting between the construction supervisor and the qualified biological monitor would take place to delineate specific areas to avoid and areas where unavoidable impacts can be minimized. This could include flagging individual shrubs for avoidance.

- Maintenance and construction staging areas would avoid areas containing Orocopia sage populations. Roads would be kept to their current widths. Measures would be taken to alert employees to avoid off-road travel and other habitat disturbances in the areas where this sage is found.

- The disturbance corridor near populations of these plants should be kept to as small an area as possible.

Specific Mitigation Measures—Special-Status Wildlife Species

Specific mitigation measures and their effectiveness are discussed below.

Desert Pupfish

The Biological Opinions (USFWS, 1992, 1993), which will be updated as part of the Project, provide a comprehensive list of measures intended to protect the two listed species that could be impacted by Project implementation, desert pupfish and desert tortoise. The USFWS determined that implementation of these measures would allow the Project to proceed without jeopardy to the continued existence of either the tortoise or the pupfish. For the desert pupfish, these measures include:

- To mitigate potential impacts to the pupfish from rail accident, the BLM would ensure that a contingency plan will be in place prior to the movement of a locomotive engine on the Eagle Mountain Railroad.

- The BLM would be the lead agency to coordinate the corrective actions/activities in the event of a derailment.

- The BLM would coordinate the identification of the responsible parties and their roles in the event of a spill or other Project-related activity. The participating parties will be signatory to the contingency plan.

- Mitigation for potential impacts to the desert pupfish would include monitoring during Eagle Mountain Railroad repair/maintenance activities as well as during any emergency cleanup operations.

- Plans for construction or major maintenance will be reviewed by the USFWS and the CDFG.

- All monitoring will be conducted by a qualified biologist who would be onsite whenever any maintenance work is conducted on or near desert pupfish habitat. If train operations affect the habitat, corrective actions would be developed by MRC in consultation with the USFWS, the BLM, and the CDFG. In the event of a rail accident in the vicinity of desert pupfish habitat, a qualified biologist would be included as a response and cleanup team member. The USFWS, BLM, and CDFG would be notified immediately (i.e., same day). Cleanup operations would be monitored by the biologist so that additional adverse impacts are not incurred by the cleanup operation.

- There would be potential impacts to water quality and possible direct kills of fish using habitat under the trestle during maintenance and construction activities. If maintenance of the trestle in the Salt Creek tributary must occur, mitigation measures would be incorporated into the Project plans to reduce potential impacts to desert pupfish.

- Storage and staging areas would be placed in locations that will not affect the habitat, and measures to avoid any discharge of pollutants will be incorporated. Refueling equipment would be maintained at the junction of the Eagle Mountain Railroad and the main tracks (CDFG, 1994b).

- Prior to each passage of a locomotive engine over the Eagle Mountain Railroad, an inspection of the fuel and lubricant holding tanks would occur. All leaks will be fixed prior to passage over Salt Creek. A log of all such inspections would be kept and provided to the BLM or the USFWS upon request. A nonporous material or other suitable material or structure capable of containing petroleum products would be incorporated into the Eagle Mountain Railroad at the Salt Creek trestle. The integrity

of this material would be inspected on a daily basis to help prevent the possibility of petroleum products from entering Salt Creek.

- Drainage would be established so runoff from the trestle or adjacent Eagle Mountain Railroad does not enter desert pupfish habitat.

- In the vicinity of desert pupfish habitat, all weed and plant removal would be done by hand. No herbicides would be used in the vicinity of desert pupfish habitat.

- Measures to restore pupfish habitat in Salt Creek and its tributary in the event of an accident would be incorporated as part of the response plan. This would include removal of any portion of the streambed that is contaminated, and the placement of a similar-type clean fill material such that the hydrology of the stream is not altered. If an accident causes the loss of the local pupfish population, the habitat would be restocked with pupfish of the same genetic strain.

- To mitigate potential loss of individuals and less than one acre of degraded habitat, particularly during the fall, construction plans for required construction would include designs and specifications that would avoid impacts to desert pupfish, including prohibition of construction during the fall when pupfish populations are most restricted and vulnerable.

- The USFWS's Carlsbad office (619/431-9440) would be notified within 3 working days if any listed species is found dead or injured in or adjacent to the action area. Notification must include the date, time, and location of the carcass, cause of death or injury, and any other pertinent information. In the event that the BLM suspects that a species has been taken in violation of the terms and conditions contained within the Biological Opinion, such situation would be reported to the USFWS's Division of Law Enforcement, Torrance, California at 310/984-0062.

- One (1) desert pupfish could be taken due to direct and indirect effects of the action. If, during the course of the action, more than one pupfish is taken, the BLM must reinitiate consultation with the USFWS immediately to avoid violation of the Act (ESA). Operations must be stopped in the interim period between the initiation and completion of the new consultation if it is determined that the impact of the additional taking would cause the irreversible and adverse impact on the species, as required by 50 CFR 402.14(i). The BLM should provide an explanation of the causes of the taking.

Additional mitigation measures not included in the Biological Opinion, but identified by other agencies and included in permits required for project implementation, include:

- The State 2081 incidental take permit (CDFG, 1994b) states that MRC would cooperate with the CDFG and researchers at the Deep Canyon Reserve operated by the University of California (University) to establish an experimental population of

the Salt Creek pupfish at that facility. Provided that the CDFG has secured all necessary state and federal permits required to remove pupfish from Salt Creek and establish the population at the Deep Canyon Reserve, and provided further that the CDFG has secured the written consent of the University to construct the pool and establish the population therein, MRC would, commencing 36 months after the startup of its operations at the Eagle Mountain landfill, pay to the University a sum not to exceed $45,000 to construct an appropriate pool to accommodate an experimental pupfish population at the Deep Canyon Reserve.

- Data from ongoing CDFG surveys of pupfish in the Salt Creek drainage would be assessed to determine whether railroad operations are affecting pupfish.

- All landfill-associated employees would participate in a desert pupfish education program. The program would be developed by the Project proponent prior to implementing all authorized activities. Employees would be advised of the potential impact to the desert pupfish and the potential penalties for taking an endangered species. The content of the education program would be submitted to the BLM for review at least 30 days prior to the presentation of the program to employees. At a minimum, the program would include the following topics: (1) occurrence of the desert pupfish and its general ecology; (2) sensitivity of the species to human activity; (3) legal protection for desert pupfish; and (4) penalties for violations of federal and state laws, reporting requirements, and Project features designed to reduce the impacts to the species and promote its long-term survival.

- All requirements given in the Streambed Alteration Agreement (CDFG, 1994c) as they relate to avoidance of impacts to desert pupfish would be implemented by the Project proponent.

Common Chuckwalla

Because Common chuckwalla is no longer considered a Category 2 Candidate species based on the February 28, 1996, *Federal Register* notice, mitigation for impacts to the population and loss of habitat would not be required. Because of their status, impacts to and mitigation measures for the Common chuckwalla have not been assessed in this EIS/EIR. Following informal consultation with USFWS biologists, however, it has been determined that translocation of certain individuals could be successfully conducted. On the basis of this informal consultation, the following mitigation measures are proposed:

- Preconstruction surveys shall be performed by a qualified biologist throughout landfill areas ahead of the expanding footprint. During these focused surveys for chuckwallas, the biological monitor would have in his or her possession tools (i.e., crowbar, wedges, etc.) that would facilitate the removal of chuckwallas from the areas of impact before any ground disturbance occurs.

- The chuckwallas that are removed would be marked using techniques currently considered standard and humane for reptiles and placed into adjacent areas outside the impact zone.

- The designated biologist would maintain records of the translocated chuckwallas, including a list of assigned numbers and maps showing the locations of the translocated animals to determine efficacy of translocating chuckwallas and minimizing the loss of individual animals.

- Given the potential exorbitant cost of this proposed mitigation, it could be possible to train landfill employees to perform the duties outlined above and report their results in appropriate year-end reports.

- Given the hierarchical social behavior of the chuckwallas, the biologist or landfill employee may choose to salvage and remove only those chuckwallas with a snout-vent length of less than 125 mm, thereby removing and introducing individuals that may be less likely to disrupt the social hierarchy of established orders in adjacent areas.

- Portions of the trust fund should be allocated for acquisition of prime chuckwalla habitat, likely on the Chuckwalla Bench, to offset the habitat loss on the Project site.

Significance After Mitigation. Because chuckwallas will be relocated and additional lands purchased and managed, impacts have been reduced to below the level of significance.

Flat-tailed Horned Lizard

Because the site does not include habitat suitable for the flat-tailed horned lizard, impacts are below the level of significance and no specific mitigation measures are required for this species.

Desert Tortoise

The Biological Opinion (USFWS, 1992) which will be updated, and the CDFG incidental take permit (CDFG, 1994b) contain the following proposed terms and conditions and mitigation measures for the Project that would avoid or minimize impacts to tortoises during construction and operation of the landfill, access road, and Eagle Mountain Railroad. These mitigation measures are incorporated for this EIS/EIR:

- Removal of up to 160 tortoises on an annual basis would be allowed. The accidental death of one tortoise per year would be allowed over the life of the Project. If either one of these limits is met, all landfill operations that could take tortoises would stop, the USFWS would be contacted, and consultation would be reinitiated. During reinitiation of consultation, the USFWS and the BLM would determine the reason for

meeting the take limit, revise the limits as necessary, and determine other appropriate measures that must be implemented to avoid meeting the revised take limit.

- To mitigate the potential for landfill-induced increases in the local/regional Common Raven population and concomitant increase of predation of juvenile tortoises, including tortoises in JTNP, trash should be covered with a minimum of 6 inches of dirt/mine tailings at the end of each working day. Furthermore, the active portion of the landfill should be fenced to aid in controlling wind-blown trash. The fencing is also intended to reduce the ability of other wildlife species such as coyote and kit fox to gain access to the trash.

- To mitigate potential increases in Common Raven populations from the presence of trash at the landfill site, a Common Raven monitoring program should be conducted for the life of the Project. This includes a minimum of 2 years of preoperation and postclosure monitoring. Monitoring should continue throughout the life of the Project or until the agencies (i.e., the BLM and USFWS) determine that it is no longer necessary. Moreover, the BLM should ensure that the Common Raven population along Eagle Mountain Road should be monitored regularly as part of the Projectwide monitoring program. A Common Raven monitoring program would also be established along the Eagle Mountain Railroad. If the regional Common Raven population is found to increase as a result of landfill activities, then an active control program would be instituted. An active control plan, along with appropriate depredation permits, would be developed and in place before use of rights-of-way begins. The Common Raven control program would include one or more of the following control measures: nest destruction, poisoning, shooting, alteration of landfill operations, or any other measures the responsible agencies deem appropriate.

- The application of methyl anthranilate is recommended/proposed to deter raven use of the landfill refuse. Experiments have been conducted using this Food and Drug Administration-approved food additive (i.e., grape flavoring) as a bird repellent on food crops and turf (Cummings et al., 1991a; Cummings et al., 1991b after RECON, 1991a). Exact concentrations and spray mediums would be determined through a testing program.

- To mitigate potential loss of tortoises and burrows during repair and/or maintenance activities along the Eagle Mountain Railroad, a desert tortoise survey would be completed prior to all construction and maintenance activity. All desert tortoise found within the impact area would be removed. All surveys would be consistent with USFWS protocol. For desert tortoise found within the impact area of the road alignment, if an existing burrow of the correct dimensions is not available, an artificial burrow would be constructed outside the road alignment, and the animal would be released at that site as soon as the exclusion fence is in place. Artificial burrows would be approximately 5 feet long and 2 feet deep at the distal end. The angle of decline for the burrow floor would not be more than 20° from the mouth to the distal end of the burrow. Other burrow dimensions could be used as deemed

appropriate by a desert tortoise expert with prior USFWS approval. If a desert tortoise is present, the appropriate party permitted to handle desert tortoise would be summoned to remove the animal from harm's way per the terms and conditions of the Biological Opinion.

- An authorized biologist (a professional biologist with demonstrated experience with desert tortoise involving techniques to locate desert tortoise and their sign, including correct tortoise handling) should be present onsite during the clearance survey(s). This biologist would have experience in marking (acrylic paint/epoxy technique) desert tortoise for future identification. Only persons authorized by the USFWS under the auspices of this Biological Opinion should handle desert tortoise. The authorized person(s) would be approved by the USFWS prior to the onset of activities that would impact desert tortoise. The Bureau/Project proponent would submit the name(s) and credentials of the person(s) that will handle desert tortoises to the USFWS for review and approval at least 15 days prior to the onset of activities.

- Tortoises that are encountered in the summer would be held until temperatures have dropped to or below 90°F and then released at the relocation site at an empty burrow or an artificial burrow after appropriate information (i.e., weight, length, width, height, sex, apparent health, and identification number) has been collected. These animals would not be held more than 24 hours. Desert tortoise found during the winter should be held and isolated from other desert tortoise by containing them in individual cardboard boxes and keeping them in a cool place, yet protected from freezing temperatures, until the following spring at which time they shall be released at the relocation area after the required information is collected. The release site should be next to an empty desert tortoise burrow, or an artificial burrow and the animal should be placed in the shade of a shrub. Under certain circumstances (i.e., episodes of warm weather), with prior approval from USFWS, desert tortoise removed from harm's way during the winter may be released and not held for the duration of the winter.

- Desert tortoise that are handled should be marked for future identification. An identification number (using the acrylic paint/epoxy technique) should be placed on the 4th coastal scute (Desert Tortoise Council, 1994). Additionally, a 35-mm photograph (slide) of the carapace, plastron, and the fourth left coastal scute will be taken. Notching is not authorized. All desert tortoise that are handled would be marked using epoxy and a tag that incorporates the USFWS's consultation number for this Biological Opinion (i.e., 1-6-92-F-39) and an individual specific identification number.

- Operators should inspect under all vehicles, equipment and supplies for desert tortoise while in or adjacent to desert tortoise habitat and outside areas cleared of desert tortoise and enclosed by a desert tortoise-proof fence. All staging areas would be clearly marked. No habitat-damaging activity shall be permitted outside these designated areas. The BLM should ensure that a preconstruction survey for desert

tortoise be conducted within one week of commencement of construction and/or maintenance activities for each portion of track to be repaired. All occupied burrows within 100 feet of the track should be examined for the presence of desert tortoise and conspicuously marked by a qualified biologist. These burrows should be inspected on a daily basis during construction and/or maintenance activities that could cause their collapse.

- Any occupied desert tortoise burrows that collapse during repair and maintenance activities would be excavated immediately and the desert tortoise translocated to an artificial burrow the minimum distance necessary to ensure protection. Any aboveground desert tortoise found within harm's way along the Eagle Mountain Railroad corridor during repair procedures should also be translocated the minimum distance necessary to ensure its safety. Removed desert tortoises would be placed off the Eagle Mountain Railroad berm. All desert tortoise that are found within the immediate vicinity of the tracks would be moved off the tracks the minimum distance necessary to ensure their safety. These animals would be placed in the shade of a shrub on the side of the tracks that corresponds with the direction in which they were traveling.

- To mitigate the loss of tortoises to train collision, the BLM should ensure that ballast or other suitable material is placed within the railroad tracks to facilitate movement of desert tortoises out of the interior of the tracks. These areas should be distributed every 100 feet along the Eagle Mountain Railroad within BLM-designated Category I and II desert tortoise habitat and should contain at least 20 linear feet of ballasts. These areas should be distributed every 100 yards [300 feet] within BLM-designated Category III or nondesignated desert tortoise habitat. These areas should be inspected monthly during the months of March through September and repaired immediately (i.e., prior to the next monthly inspection). The BLM should ensure that each train trip between February 1 and October 31 should be preceded by a qualified biologist to survey and remove any desert tortoise found on or adjacent to the Eagle Mountain Railroad. This monitoring/protection program should be conducted for a minimum 3 years to collect data to determine the best locations, if any, for fences and culverts along the rail line. This effort is primarily designed to collect data for future management decisions. It will also effectively remove tortoises from harms' way.

- The BLM should ensure that a long-term desert tortoise monitoring program be instituted that will monitor changes in the populations as the Project proceeds. The intent of the monitoring program is to detect the long-term effects on the desert tortoise population from both direct and indirect impacts associated with the Project. This program should be approved by the USFWS and the BLM. The program should include 2 years of preconstruction monitoring.

- To mitigate the effects of fragmentation of tortoise habitat resulting from reactivating the Eagle Mountain Railroad, the BLM should ensure that where culverts are needed to provide for flood flows, their size should be such as to allow unobstructed

movement of desert tortoise under the railroad tracks. In addition to existing contributors to habitat fragmentation in the Project vicinity, such as the existing railroad tracks and roads, fencing is also a potential factor in fragmentation. To address this concern, culverts will be provided to facilitate tortoise movement and to minimize the likelihood of fragmentation or death. In addition, in the absence of fences, wildlife (including the desert tortoise) would be traversing roads or railroad tracks resulting in the potential of death. Information provided by National Biological Service biologist, Dr. William Boarman, indicates that fences alone have been shown to reduce roadkills of all types of animals, including tortoises; the culverts are installed to allow tortoises to intermingle and to maintain the integrity of the fence so that tortoises are not killed. The mouth of the culverts be tied into the natural terrain to facilitate unobstructed movement of desert tortoise under the railroad tracks. Tortoise-proof barriers, if found to be needed by the USFWS, should be placed parallel to the tracks and oriented to guide tortoises to the culverts. The BLM should ensure that new culverts be placed in areas where current tortoise use of the railroad track berm is concentrated. The design of all barriers and culverts, and their locations, should be approved by the USFWS and the BLM. Culverts should be monitored for indication of desert tortoise use. The culverts should be monitored regularly and kept clear of obstructions for the life of the Project. These culverts should be monitored yearly (prior to each spring's desert tortoise activity period) and corrective action taken (prior to each spring's desert tortoise activity period) to maintain an unobstructed path for desert tortoises through the culverts. Immediately following storm events, during the desert tortoise's activity period, all culverts should be inspected and repaired as necessary to maintain an unobstructed path to this animal's movement. The monitoring data should be evaluated to determine which areas warrant placement of a barrier/culvert system. Exact locations and designs of barriers and culverts should be selected in the field with the direction of USFWS, BLM, and CDFG personnel.

- To mitigate the loss of 150 acres resulting from improvements to Eagle Mountain Road and potential fragmentation caused by the road, the BLM would receive 375 acres [2.5:1] of desert tortoise habitat from Kaiser. (This acreage represents a direct replacement of desert tortoise habitat and are in addition to those acres involved in the proposed land exchange.) A tortoise-proof fence would be placed on either side of Eagle Mountain Road. Fencing should result in a nonbreachable barrier, and its support structure may be comprised of a variety of materials. Galvanized hardware cloth of 1/8-inch diameter, or smaller, should be used along the base of the fence and be buried 24 inches underground and extend at least 18 inches aboveground. Where burial is not possible, the bottom half of the fence should be laid flat on the ground, opposite the road, and secured in a way that prevents desert tortoise from gaining access to the road. This fencing should be tied into the culvert/bridge system so that desert tortoise moving along the barrier would be passively guided to safe passage points under the road. This fencing should be monitored yearly (prior to each spring's desert tortoise activity period) and corrective action taken (prior to each spring's desert tortoise activity period) to maintain the integrity of the barrier to desert tortoise.

In addition, following storms, the integrity of the fence shall be determined and repaired immediately if found to be damaged. In washes and other areas susceptible to flash-flooding events, "break away" tortoise fabric may be installed. These segments would be loosely tied to the fence on higher ground, permitting them to "break away" in the event of substantial surface flow.

- Culvert passage areas should be provided at least once every mile. These culvert passage areas should be placed along Eagle Mountain Road from the intersection of Interstate 10 and Eagle Mountain Road north along a distance of approximately 4.5 miles. A minimum of four crossings, comprised of a minimum of three culverts each (each culvert being no smaller than 18 inches in diameter), should be provided. If desert tortoise are found not to make use of the culverts under Eagle Mountain Road, then other measures should be developed as necessary. This may include the construction of several low bridges over the washes to facilitate movement of desert tortoise across this barrier. If monitoring shows an additional need for culvert crossings further north along Eagle Mountain Road, they should be installed within one year of that determination.

- To mitigate the effects of increased number of road-killed animals and concomitant increase of available food for tortoise predators, such as Common Raven and coyote, MRC would be responsible for removing road-killed animals from along Eagle Mountain Road to reduce the attraction of Common Raven and other potential desert tortoise predators to the area. This activity will occur daily or as necessary to ensure that animals are not left on or alongside the road.

- To mitigate the effects of increased human activity in the Project area that could result in increased potential for vandalism and illegal collection of tortoises, increased potential for off-highway vehicle use in the area resulting in loss of tortoise burrows and increased number of tortoises being crushed, and increased potential for the release of captive, diseased tortoises into the wild thereby exposing healthy, wild tortoises to Upper Respiratory Tract Disease, all landfill associated employees would participate in a desert tortoise education program as required by the USFWS (1992). The program would be developed by the Project proponent prior to implementing all authorized activities. Employees would be advised of the potential impact to the desert tortoise and the potential penalties for taking a threatened species. The content of the education program would be submitted to the Bureau for review at least 30 days prior to the presentation of the program to employees. At a minimum, the program should include the following topics: occurrence of the desert tortoise and general ecology, sensitivity of the species to human activities, legal protection for desert tortoises, penalties for violations of federal and state laws, reporting requirements, and Project features designed to reduce the impacts to desert tortoises and promote the species long-term survival. A Desert Tortoise Procedure Card (to be distributed to all employees) should be developed to reflect the measures necessary to avoid harming the federally threatened desert tortoise. The card should reflect the

current status of the desert tortoise and the prohibition of take. The card should identify the person(s) authorized to handle this species.

- To mitigate possible loss of desert tortoise resulting from changes in surface water flow patterns that may result in occasional flash floods east of the landfill. RECON (1991) did not consider this impact to be sufficiently important to warrant any specific mitigation measures. However, Circle Mountain Biological Consultants found tortoises residing south and east of the existing mine, and has proposed new measures to address this potential impact as outlined below.

- Reporting and reinitiation requirements. If the Project proponent fails to comply with the reasonable and prudent measures or any of the terms and conditions of the Biological Opinion, the BLM should suspend the rights-of-way for the proposed Project until such time that the proponent is in compliance with these terms and conditions. The BLM should also notify the proponent at that time that failure to comply would lead to revocation of their rights-of-way.

- The Project proponent would designate a field contact representative (FCR) who would be responsible for overseeing compliance with protective measures for the desert tortoise and for coordination and compliance with the BLM's stipulations. The FCR should have the authority to halt all associated Project activities that may be in violation of the stipulations. The biologist shall provide a full report to the BLM and USFWS of all desert tortoise that are found and moved from harm's way. This information should include: (1) the locations (narrative and maps) and dates of observations; (2) general conditions and health, and apparent injuries and state of healing, and whether animals voided their bladders when handled; (3) locations moved from and locations moved to; and (4) diagnostic markings (e.g., identification numbers or previously marked lateral scutes). The report should be submitted within 30 days to the USFWS following the first desert tortoise activity period that coincides with Eagle Mountain Railroad activity.

- The USFWS' Carlsbad Office (619/431-9440) must be notified within 3 working days should any listed species be found dead or injured in or adjacent to the Project area. Notification must include the date, time, and location of the carcass, cause of death or injury, and any other pertinent information. In the event that the BLM suspects that a species has been taken in violation of the terms and conditions contained within this Biological Opinion, such situation should be reported to the USFWS' Division of Law Enforcement, Torrance, California, at 310/984-0062.

In addition to the mitigation measures given in the Biological Opinion, the following mitigation measures should be incorporated into the Project's plan of operations:

- The landfill working face shall be limited to 2 acres.

- No areas will be left uncovered for more than 60 minutes.

- Twelve inches of interim cover shall be placed on areas not active for 180 days.

- To mitigate the potential for fire created by reactivating the Eagle Mountain Railroad and the increased incidence along the access road, MRC would develop a contingency plan that will address the potential for Project-related fire along Eagle Mountain access road and the Eagle Mountain Railroad. A list of phone numbers of all local fire departments would be made available to all waste haulers and train operators, and a system identified that would result in the quickest response to any fires observed in the area. Although it would be difficult to differentiate between Project-related and non-Project-related fires along Kaiser Road, the contingency plan should facilitate extinguishing any such fires, protect adjacent resources, and provide an immediate benefit to the local community.

- To mitigate potential loss of tortoises and tortoise-occupied habitat south and east of the proposed landfill footprint, focused tortoise surveys would be conducted to remove tortoises from harm's way prior to any Project-related ground disturbances on the eastern and northeastern parts of Phase 4 and south of the Townsite (no ground disturbance is currently planned for this area).

- If landfill operators (all of whom should be familiarized with tortoise occurrence in the area per the requirement for a tortoise education program) or biologists find tortoises within impact areas on the landfill during focused surveys, that information would be reported to the landfill's environmental coordinator or subcontractor and the USFWS. If tortoises are found, they would be transported to the nearest, adjacent area on MRC lands, outside all phased development. All tortoises, regardless of where they are found, would be handled per the requirements of the Biological Opinion (USFWS, 1992).

- Owners of domestic animals or pets within the Townsite would be required to keep their animals within fenced areas or on leashes. A condition would be added to the Development Agreement to require fencing. Domestic livestock would also be prohibited through the Development Agreement.

In addition to the above, the following mitigation measures are proposed to eliminate the potential for use of the landfill by ravens (Boarman, 1992):

- Active landfill areas will be covered with at least 6 inches of fill at the end of each working day; Dr. Boarman recommends that more cover may be utilized if 6 inches is found to be insufficient to guarantee 100 percent coverage overnight. For the proposed Project, if 6 inches of cover is found to be ineffective, active landfill areas will be covered with the amount of cover required to eliminate the potential for use of the landfill by ravens.

- If raven access is not prevented by the fill cover, a more efficient means of cover will be evaluated (e.g., a solid, impenetrable synthetic material)

- A coyote-proof fence will be installed around the perimeter of the landfill site to prevent coyotes from digging up trash and exposing it for use by ravens; this fence will also prevent loss of garbage due to wind

- Screening, inspection, and other areas where garbage may be exposed to ravens for extended periods of time will be enclosed

- Drains will be provided at truck washdown areas to prevent water buildup; washdown areas will be cleaned of any residual garbage immediately after use

- Sewage ponds, leachate ponds, and all other sources of water will be rendered raven-proof

- Potential raven perch sites on or near the landfill will be removed or altered

- Methyl anthranilate, or other similar effective chemical repellent, will be applied to the areas of newly deposited garbage on an experimental basis; if proven effective for raven control, regular applications will be used

- Landfill closure activities will be restricted to tortoise nonactive seasons (mid-winter or late June) to preclude ravens from foraging in tortoise habitat for alternative food sources

- Collection and transport facilities/activities will be managed to minimize potential for raven access and use of garbage throughout the desert areas

- A raven monitoring program to track potential changes in the local raven population will be implemented

Birds

Because there are no significant adverse impacts to bird species, no specific mitigation measures are required or proposed for the following species:

- Northern Harrier, Sharp-shinned Hawk, Cooper's Hawk, Golden Eagle, and Prairie Falcon
- Swinson's Hawk
- Peregrine Falcon
- California Black Rail and Yuma Clapper Rail

- Western Burrowing Owl
- Eagle Mountain Scrub Jay
- Black-tailed Gnatcatcher
- LeConte's Thrasher
- Loggerhead Shrike
- Yellow Warbler and Yellow-breasted Chat

Bats

- California leaf-nosed bat and Townsend's big-eared bat

The mitigation for loss of habitat includes: (1) extending the adit currently used for winter roosts; (2) limiting access to the adit; and (3) using mitigation trust funds to monitor summer and winter populations, identify and permanently protect suitable roosting and/or maternity habitat, and to establish any further measures that may be required by future monitoring. Even with mitigation, loss of this habitat could potentially occur. Loss of this habitat would be a significant impact.

Pallid Bat

Potential mitigation could include modifying guzzlers to allow ponded water. However, this ponded water might also serve to attract more ravens. With mitigation, impacts would be reduced to below the level of significance.

Nelson's Bighorn Sheep

Based on the current survey and analysis work, and on the previous measures established for bighorn sheep, the following measures are proposed to mitigate potential adverse effects:

- To compensate for the loss of water sources at the site, two to three new, permanent water sources, ensuring year-round water availability, will be placed away from the mine site to encourage bighorn sheep to use the surrounding natural areas rather than the Project site. New water sources will be placed in habitat at least 1 year before water sources are removed to enable sheep to habituate to the new water sources. These new sources will be maintained throughout the life of the Project. The sites and designs will be selected and/or approved by biologists from the BLM, CDFG, and UNLV. If the best locations are in JTNP, the NPS will be consulted to choose the location and to facilitate development. Buzzard Springs will be rehabilitated and cleared of tamarisk. Two new water sources in the southern Orocopia Mountains could reduce the risk of train-kill for sheep possibly moving between the Orocopias and the Chocolate Mountains in search of water.

- The loss of up to 1,038 acres (330 high quality as identified by RECON, 1992) of bighorn sheep habitat would be mitigated by the development of new water sources, and through purchase of additional lands with Trust funds.

- Approximately 644 acres of potential habitat would remain as natural open space around the periphery of the proposed landfill. This habitat would provide a buffer zone between the landfill operation and relocated sheep population. A specific condition will be required in the Development Agreement or other suitable and enforceable measure at the Townsite to restrain dogs or other large pets from harassing sheep.

- A specific condition would be adopted in the Development Agreement to prohibit domestic livestock in the Townsite.

- An employee awareness program would be implemented that includes a discussion of bighorn sheep habits and habitat needs. The awareness program would increase acceptance and knowledge of the sheep, which may help to protect sheep near the landfill site and Townsite.

- To the degree possible, trains would not stop in the pass between the Orocopias and Chocolate Mountains (3- to 4-mile segment of the 52-mile-long Eagle Mountain Railroad). If trains must stop in the area due to emergencies, they would not idle, but be turned off if possible. If possible, maintenance activities on this section of the line would not occur in summer. Trains would proceed through the pass at the slowest possible speed to reduce noise levels and the possibility of collisions with animals.

- If tortoise fences are required along the Eagle Mountain Railroad, they would be designed to exclude tortoises but not restrict sheep movement. Prior to fence placement, CDFG and sheep specialists would be consulted to discuss fence location and design.

- Trust funds could be used to monitor in the Orocopia Mountains and the western portions of the Chocolate Mountains, and to purchase additional lands for habitat preservation.

- If any sheep are injured or killed by a train, this information would be fully documented, and the CDFG contacted within three working days of the accident. Disposition of the injured or dead sheep would be determined in conjunction with CDFG bighorn sheep biologists.

Because additional water sources will be developed, a buffer area will be left around the northern portion of the landfill, and additional habitat can be secured through the Trust fund, impacts will be reduced to below the level of significance.

4.7.3.4 Significance After Mitigation

The general and specific mitigation measures delineated above, as well as the inherent mitigation measures incorporated into the proposed Project design and operation, would reduce the potential for impacts to Special-Status Plant and Wildlife Species to below the level of significance with the exception of the California leaf-nosed bat and the Townsend's big-eared bat. Proposed mitigation measures may not prevent the loss of habitat for these species in the Kaiser adit, which could result in the loss of local populations or these species. Additional mitigation measures for these species, including identification and protection of suitable roosting and/or maternity habitat, could be identified based on information collected during monitoring of summer and winter populations of these species using mitigation trust funds.

Analysis of Effectiveness of Desert Tortoise Mitigation Measures

The following ruling was made on July 26, 1994, in the San Diego Superior Court (also see Section 1.2.1 of this EIS/EIR) regarding the desert tortoise mitigation measures proposed in the previous EIS/EIR:

> "There is not substantial evidence to support the conclusion that the mitigation measures will be effective in reducing the risks to the desert tortoise...[t]he EIR discusses the threats and describes proposed mitigation measures including monitoring, relocation, construction of culverts under the road and rails, berm over the tracks, and barriers, among other measures. The EIR concluded '...given the proposed tortoise mitigation, tortoise impacts appear mitigable to nonsignificance.' (6 A.R. 2652.) There is nothing in the record to support this conclusion."

The USFWS consulted with the BLM under Section 7 of the federal Endangered Species Act and determined, in its Biological Opinion (1-6-92-F-39) (USFWS, 1992), that the Project would not jeopardize the continued existence of desert tortoise if certain terms and conditions (i.e., mitigation measures) were implemented. This "no jeopardy" opinion was confirmed in 1993, following reinitiation of consultation (USFWS, 1993b).

In response to the Court's determination, an independent review and analysis has been conducted of 263 projects that have been authorized in desert tortoise habitats by the USFWS under 234 federal opinions, to determine the efficacy of terms, conditions, and other mitigation measures in protecting tortoises, particularly during construction and operation phases. The methodology and results of this review and analysis are contained in the Biological Technical Report (Appendix G of this EIS/EIR). In each opinion, anticipated harassment limits (i.e., the number of tortoises that may be handled) and anticipated mortality limits (i.e., the number of tortoises that may be accidentally killed) are specified. If either of these limits is met, the Project proponent is instructed to cease construction or operation of the Project and reinitiate consultation between the federal lead agency and the USFWS to

determine why the limits were met and what additional measures must be taken to avoid exceeding revised limits.

For each opinion, terms and conditions and other measures proposed by the Project proponent to avoid excessive harassment and mortality of tortoises are specified. These terms and conditions are nondiscretionary (i.e., they are required by the USFWS if the Project is to occur). Section 7 of the ESA and the Biological Opinion would both be violated if the Project occurred without implementation of these measures. For example, if the harassment limit is set at 10 tortoises and the mortality limit set at 1 tortoise, the terms and conditions in the opinion are given to avoid exceeding either of those limits. The harassment limit is considered to be less important than the mortality limit in determining the effectiveness of the terms and conditions to protect tortoises (e.g., moving 10 tortoises from harm's way is an effective way of avoiding the mortality of those 10 tortoises).

For the Eagle Mountain Project, there are several regulatory documents that have identified mitigation measures to protect tortoises. With the exception of establishing a 35-mile-per-hour speed limit on Eagle Mountain Road, which is unique to the previous EIS/EIR (BLM and County of Riverside, 1992), the federal opinion rendered by the USFWS includes every other mitigation measure given in the other previous regulatory documents. Therefore, analysis of the efficacy of the measures given in the federal opinion to protect tortoises during construction and operation of the landfill covers all such measures identified to date.

Given the inherent vulnerability of this species, it is reasonable to conclude that if desert tortoise mortality limits in the majority of more than 200 federal Section 7 Biological Opinions have not been exceeded, the terms and conditions specified in those opinions have effectively reduced the number of tortoises that would have been killed in the absence of such mitigation measures. Owners and consultants involved with each of the above-referenced projects were contacted to determine the actual number of tortoises handled and accidentally killed (see Appendix G).

Similarity of Previously Implemented Terms and Conditions with Those of Eagle Mountain's Biological Opinion

The similarity of the proposed Project's terms and conditions with those given in the 234 other opinions was analyzed. Terms and conditions given in Eagle Mountain's opinion are separated into 21 different categories. Nine of these are termed "core conditions," because they are typical requirements found in other Biological Opinions. Eight of the remaining 12 categories have occasionally been required in other Biological Opinions, and four are unique to Eagle Mountain.

Core Conditions

The core conditions that would be required for the Proposed Project are given in Table 4.7-1. The percent of core conditions found in the Biological Opinion also is included in Table 4.7-1.

Table 4.7-1
Percent Core Conditions Found in 101 California and 70 Nevada Opinions That Have Been Implemented

Condition	Description	California (%)	Nevada (%)
a.	Buy land	44	0
b.	Revoke permit	22	1
c.	Appoint field contact	77	87
d.	Tortoise awareness program	99	99
e.	Check beneath vehicles	64	25
f.	Define work zone	91	93
g.	Onsite monitor	98	99
h.	Tortoise-proof fences	59	75
i.	Project end report	72	8

The three most common terms and conditions cited in all Biological Opinions, including the one issued for Eagle Mountain, are: (1) tortoise awareness program, (2) define work zone, and (3) onsite monitor. Five of these nine terms and conditions (d, e, f, g, and h) are field-related measures that are intended to avoid tortoise mortality during construction, operation, and maintenance. Based on their experience monitoring construction in occupied tortoise habitat (Appendix G) and discussions with Ray Bransfield and Kirk Waln of the USFWS' Ventura office, Circle Mountain Biological Consultants concluded that the four measures that provide the most protection to tortoises are: (1) tortoise awareness program, (2) define work zone, (3) onsite monitor, and (4) tortoise-proof fences (see Appendix G).

Circle Mountain Biological Consultants reported that only 59 tortoises have been reportedly killed during 171 projects where the above terms and conditions were required. They concluded that tortoises have been effectively protected during USFWS-authorized projects. Then, given the above information, Circle Mountain Biological Consultants found that core conditions d, f, and g were required for most of the 171 projects where tortoises were protected. They concluded that those three measures and tortoise-proof fencing were the most effective measures in protecting tortoises during construction, operation, and maintenance activities of projects in tortoise habitat. Circle Mountain Biological Consultants cited that information as evidence that tortoises have been protected by the same terms and conditions that would be required for the proposed Project.

Other Conditions

The measures listed in Table 4.7-2 are also found in the Biological Opinion for the proposed Project, but are not typically found in other Biological Opinions. Table 4.7-2 lists the number of opinions in which the same or similar measures have been required. The table includes all projects with the required measure, including those that have not yet occurred.

Table 4.7-2
Number of Opinions for Which "Other Conditions" are Required

Condition	Description	California	Nevada
j.	Install ballasts	0	0
k.	Eagle Mountain Railroad culverts	2	2
l.	Roadway culverts	6	5
m.	Cover refuse	1	3
n.	Monitor ravens	11	0
o.	Remove roadkills	0	0
p.	Monitor train trips	0	0
q.	Monitor tortoise populations	7	1
r.	Fence landfill	2	2
s.	Chemical deterrent of ravens	0	0
t.	Eliminate raven nests	18	0
u.	Conservation Trust Fund	0	2

The effectiveness of these measures is discussed in Appendix G. Circle Mountain Biological Consultants indicated that culvert (measures k and l) use by tortoises is equivocal, but likely effective when used with tortoise-proof fences. Boarman (1995) found significantly fewer tortoise carcasses along a fenced road than along an unfenced road, and concluded that tortoise mortality was decreased by 93 percent. Other than tortoise, 88 percent fewer vertebrate carcasses were found along fenced versus unfenced roads. Boarman (1995) observed two tortoises to use culverts on four occasions between July and September 1995. The fences directed the tortoises toward the culverts.

For the proposed Project, monitoring raven populations (measure n) would be required to test the efficacy of the recommended measures. Elimination of ravens (measure t), chemical deterrence (measure s), and other measures (measures m and o) would be required to ensure that raven populations do not increase. Into the foreseeable future, the regulatory agencies and others would be enlisted to continue to address the potential impact and develop and implement new measures as they are identified and required to control ravens.

None of these measures has been implemented for a period longer than 5 years (i.e., since 1990 when the tortoise was federally listed). Although these measures are intuitively appropriate, and could serve to eliminate the sponsorship of ravens by new development, there is little opportunity to determine their efficacy in avoiding increases of ravens in the desert. Nonproject-related conditions that benefit ravens, such as increased roadkills and nesting opportunities, result in inflated raven populations even when development projects are designed to avoid that increase.

Installation of ballasts to reduce fragmentation of tortoise habitat (measure j), removal of roadkills to avoid feeding tortoise predators (measure o), removing tortoises from the Eagle Mountain Railroad ahead of each train trip (measure p), and chemical deterrence of ravens (measure s) are all intuitive measures that have been recommended for this Project, but have

not been recommended for other projects authorized by the USFWS. Because they have not been implemented, there is no record available to determine how effective they might be in protecting tortoises and avoiding habitat fragmentation.

Measure u, the Eagle Mountain Environmental Mitigation Trust, is a key measure that proposes land purchases to set aside lands in perpetuity that are considered valuable habitat. Only two other projects reviewed have similar requirements, but neither of them approaches the scale of the proposed Project. Assuming full capacity of 20,000 tons of refuse each day, this fund could generate up to $710 million over the life of the landfill (or approximately $6 million per year) for the purchase and conservation of desert tortoise habitat in Riverside County. It is likely the most substantial mitigation ever proposed for a single project in the desert. In addition, the lands purchased under the Trust would provide protection for a greater number of species (i.e., not just endangered and threatened, but also sensitive species. The figures are estimates that have factored in neither the potential inflation in real estate prices nor the interest amassed on $6 million per year.

A similar measure has been implemented, the Coachella Valley Fringe-toed Lizard Habitat Conservation Plan (HCP) (1985), approved by the USFWS in 1986. Since 1986, Coachella Valley developers have paid mitigation fees of $600 per acre within the HCP boundary to support fringe-toed lizard habitat acquisition. Almost $23,500,000 have been spent to acquire 5,296 acres within the Coachella Valley Preserve (BLM, 1995), which is about $4,300/acre. In comparison, during a 9-year period with the landfill operating at full capacity, the Environmental Mitigation Trust would generate about $54,000,000 for land acquisition, which is twice as much as generated in the Coachella Valley. Private lands in eastern Riverside County, where the Trust would be used, currently sell for $350 to $500 per acre. As such, during a 9-year period with the landfill operating at full capacity, about 108,000 acres could be purchased and preserved (i.e., based on spending $54,000,000 for lands at $500 per acre). This is 20 times more conservation land than has been acquired by the Coachella Valley HCP, which is one of the largest conservation plans currently in operation.

Given the preceding analysis and discussion, Circle Mountain Biological Consultants concluded that implementation of the terms and conditions for projects that have thus far occurred has significantly reduced the number of tortoises actually killed relative to the numbers that were authorized. According to the USFWS, if all mortality limits had been met, the desert tortoise would not have been jeopardized. Only 5.4 percent (59 of 1,096) authorized tortoises mortalities have reportedly occurred for the 171 projects reviewed. Tortoise mortalities have been reported on only 13 of 171 (7.6 percent) projects where terms and conditions similar to those of Eagle Mountain have been required. Most known tortoise mortalities have occurred during construction of long, linear projects, such as pipelines and transmission lines.

Circle Mountain Biological Consultants concluded that: (1) tortoise awareness programs, (2) defining work zones, (3) onsite monitors, and (4) tortoise-proof fences have afforded the most protection to tortoises during construction, operation, and maintenance activities on

previously approved projects. These measures have been required for 99 percent, 92 percent, 98 percent, and 67 percent, respectively, of the projects occurring in California and Nevada where only 5.4 percent of authorized tortoise mortality has reportedly occurred. Given the similarity of the Biological Opinion issued for the proposed Project with the previous opinions issued, Circle Mountain Biological Consultants concluded that the mitigation measures required for the proposed Project would effectively protect tortoises. Monitoring studies would be implemented and advisory committees established to ensure that protection was afforded and measures modified as necessary to deal with unforeseen impacts to tortoises and other biological resources.

Other terms and conditions included in the Biological Opinion for the proposed Project are unique or rarely required for other projects. Fencing roads appears to effectively reduce mortality of tortoises and other vertebrates. In addition to the specific mitigation measures described above, $45,000 per year for 3 years will be dedicated to CDFG specifically for its use to monitor the effectiveness of mitigation measures.

Because implementation of the recommended terms and conditions for this and other projects will reduce the potential numbers of tortoises killed to less than that authorized, the potential impacts would be reduced to below the level of significance.

4.7.4 Biodiversity and Ecosystem Function

During the scoping process, the NPS raised issues concerning potential impacts to biodiversity. Of the primary threats to biodiversity identified by the CEQ (see Section 3.7.3), the proposed Project could affect biodiversity primarily as a result of loss of habitat, habitat fragmentation, and changes in the relationship between species in the form of increases in predator/scavenger populations in response to increased food availability at the landfill site, and from increased road kills.

Habitat loss would occur from access road improvements and from loss of approximately 1,038 acres of currently undisturbed habitat at the landfill site. Habitat could be functionally fragmented for several species, including desert tortoise and Nelson's bighorn sheep, by reactivation of the Eagle Mountain Railroad, which could interrupt movement through existing habitat for these species. Future habitat fragmentation and degradation in the vicinity of the Project would be reduced through extensive habitat acquisition by the Environmental Mitigation Fund, funded through tipping fees on waste deposited at the landfill. Reduced future habitat loss through habitat acquisition and the resulting protection of ecological function would offset some of the effects of habitat fragmentation attributable to the proposed Project. Acquisition of extensive high quality habitat is considered a significant beneficial impact protecting biodiversity and ecosystem function in the region of the Project.

Potential changes in the predator/prey relationships that could adversely affect prey species could result from increased food availability associated with the landfill. The proposed Project includes landfill operations intended to avoid use of the landfill for food by predators,

particularly Common Raven and coyote, by covering waste daily with a minimum of 6 inches of dirt. It is anticipated that populations of these species could increase locally, with associated increased mortality on several special-status species, particularly desert tortoise, if additional measures are not taken to prevent access to landfill waste by these species. Additional measures that will be included in the operations plan include: (1) continuous covering of waste; (2) limiting the working face to 2 acres or less; and (3) providing additional cover for any area that has not been active for 180 days.

Introduction of exotic species beyond those already present in the vicinity of the proposed Project is unlikely to occur from the proposed Project. The introduction of exotic species primarily occurs in disturbed areas. Much of the Project vicinity is already disturbed and supports exotic species including salt cedar, and various non-native grasses and forbs. The incidence of these species could increase in the newly disturbed areas associated with improvements to the access roads. Most of this area, however, is disturbed and currently supports some exotic plant species. Thus, the actual extent and abundance of exotic species is not likely to increase significantly with the proposed Project.

The NPS has expressed concern that operation of the landfill will result in eutrophication (increased primary productivity) at JTNP as a consequence of atmospheric nitrate deposition. Atmospheric nitrate deposition results from the emission and transport of anthropogenically generated nitrogen compounds. Sources include agricultural emission of ammonia/ ammonium and organic nitrogen from animal wastes and fertilizer applications, and oxides of nitrogen emitted from fossil fuel combustions (automobiles, power plants, industry) (Paerl, 1993). Recent studies indicate up to 30 kg/ha/yr of dry nitrate are deposited primarily from automobiles in the San Dimas Experimental Forest, just east of Los Angeles (Personal Communication, Kathy Freas/CH2M HILL with E. Allen. August 17, 1995).

Increasing nitrate deposition is of concern in desert ecosystems because desert soils typically are nutrient poor and primary production can be limited by nitrogen availability. Increased nitrogen could potentially allow the establishment and spread of plant species that otherwise would not occur in the desert because of nitrogen limitations. Sources of nitrate associated with the proposed Project are limited to fossil fuels used by trucks and trains delivering waste to the landfill and to the use of personal vehicles and home heating for occupants of the Townsite. Landfill gases include only methane and carbon dioxide and are not a source for oxides of nitrogen. The small amounts of nitrate produced as a result of fossil fuel use associated with landfill operation would be eclipsed by the amount of nitrate produced in the Los Angeles Basin and in urban desert communities closer to the landfill. Additionally, nitrate is transported by prevailing winds, which are westerly in the vicinity of the proposed Project. Because the landfill is southeast of JTNP, nitrates generated from landfill operations would be transported away from JTNP rather than toward it. JTNP expects to see an increase in visitorship to the park to 4 million persons per year by the year 2010 (NPS, 1995). Many, if not most, of these visitors will arrive by automobile and will drive through the park. This source of nitrates from fossil fuel combustion is expected to be greater than that produced by landfill operations. Nitrate deposition associated with landfill operations, therefore, is expected to have no effect on ecosystem function JTNP (see Section 4,4 Air Quality).

The NPS also expressed concern that the Project would contribute to global warming, which is another product primarily of fossil fuel use. In this case, landfill gases (carbon dioxide and methane) do contribute to global warming. Initially, these gases will be burned at the landfill leaving only carbon dioxide and water vapor. The incremental increase in the region caused by the landfill is very small compared to that produced by Los Angeles and surrounding urban areas, as well as in the park itself. The contribution to global warming would be further reduced if landfill gases are captured, as is planned when they are produced in sufficient amounts for this process to be feasible. The small incremental increase in atmospheric carbon dioxide resulting from Project operations would not contribute measurably to global warming, and is therefore not considered to be a significant impact. Because impacts will be mitigated to below the level of significance, the JTNP's designation as a Biosphere Preserve will also not be affected.

4.7.5 No Action Alternative

The No Action Alternative would leave the mine site, Eagle Mountain Railroad, access road, and Townsite in their current condition; and no landfill would be constructed. Failure to develop the landfill site would eliminate all known and potential significant adverse impacts identified for the proposed Project. The No Action Alternative would also prevent the land exchange between MRC and the BLM that would provide long-term protection to 2,486 acres of high quality habitat for desert tortoise, desert pupfish, Nelson's bighorn sheep, and other wildlife and plant species that would be protected on these lands.

The No Action Alternative would also eliminate the contribution of a maximum of $45,000 to the University of California to construct a pool to establish an experimental population of desert pupfish, and would eliminate the development of the Environmental Mitigation Trust, which would manage tipping fees of $1.00 per ton of waste deposited at the landfill. At full operation, this fee is expected to accrue up to $20,000 per day for the Trust for the life of the Project. The Environmental Mitigation Trust would be used to acquire important habitat to protect sensitive species and ecosystem function in the region of the Project. Failure to establish an experimental population of desert pupfish could prevent re-establishment of the local population of this species if a flood or other event eliminated the local Salt Creek population. This population has persisted in its current location in spite of repeated flooding that has reduced the population to as few as two individuals (CDFG, 1992). Therefore, lack of an experimental population is not expected to affect persistence of the local population and no impact to this species is expected. Not implementing the land exchange and the Environmental Mitigation Trust to protect high quality habitat from fragmentation and development would contribute to the continued degradation and fragmentation of habitat in the vicinity of the Project and is considered a significant adverse impact to special-status species and biodiversity in the region of the Project from the No Action Alternative.

4.7.6 Reduced Volume of Onsite Disposal Alternative

A 20 percent reduction in the daily capacity of the landfill from that allowed in the proposed Project would not necessarily result in a 20 percent reduction in impacts to biological resources anticipated from the proposed Project. There could be possible reduction in road kills and Eagle Mountain Railroad kills, which would be expected from fewer truck and train trips per day. With reduced funds, however, lands available for land purchase for habitat protection would also be reduced. This reduction is considered a significant adverse impact of the Reduced Volume Alternative.

4.7.7 Alternate Road Access Alternative

The use of Kaiser Road rather than Eagle Mountain Road would reduce the loss of desert tortoise habitat by 150 acres from the loss associated with widening Eagle Mountain Road and construction of the Eagle Mountain Road Extension. Use of Kaiser Road would be expected to result in fewer tortoises being killed by vehicles because habitat along Kaiser Road supports fewer tortoises than does habitat along Eagle Mountain Road. Use of Kaiser Road, however, would increase the distance traveled by trucks from Interstate 10 to the landfill site by approximately 38 percent per round trip over the distance on Eagle Mountain Road. This increased distance could expose more wildlife to road kill than the shorter distance along Eagle Mountain Road. Exposure of more wildlife to road kill is considered preferable to increased tortoise mortality and loss of tortoise habitat along Eagle Mountain Road, thus the Alternate Road Access Alternative may have fewer impacts than the proposed action.

4.7.8 Rail Access Only Alternative

Compared to the proposed Project, the Rail Access Only Alternative would eliminate significant adverse impacts associated with habitat loss from Eagle Mountain Road improvements and extension, desert tortoise mortality from vehicle collisions, and road kills of other wildlife species that could contribute to increasing Common Raven numbers. The Rail Access Only Alternative would reduce contributions to the Environmental Mitigation Trust by up to 10 percent because it reduces waste disposal by 2,000 tons per day from 20,000 tons to 18,000 tons. The value of the reduction of the significant adverse impacts outweighs the small reduction in the value of the Environmental Mitigation Trust. Therefore, the Rail Access Only Alternative may have fewer impacts than the proposed action.

4.7.9 Landfill on Kaiser Land Only Alternative

Compared with the proposed Project, the Landfill on Kaiser Land Only Alternative would reduce significant adverse impacts associated with loss of individuals of Alverson's foxtail cactus and with loss of habitat for Nelson's bighorn sheep resulting from destruction of currently undisturbed habitat at the landfill site. All other significant adverse impacts of the proposed Project would occur with this alternative. Elimination of the land exchange would

prevent protection and management of 2,486 acres of high quality habitat, including 375 acres of desert tortoise habitat intended to mitigate the loss of desert tortoise habitat associated with the access road improvements. Reduction in the maximum daily waste disposal capacity to 10,000 tons from 20,000 tons for the Proposed Alternative would reduce contributions to the Environmental Mitigation Trust by up to $10,000 per day. Reduction in the total capacity of the landfill would reduce the site life to approximately 39 years compared to approximately 100 years for the Proposed Alternative. This would further reduce the contribution to the Environmental Mitigation Trust. Lack of protection of 2,486 acres of high quality habitat and approximately 75 percent reduction in contributions to the Environmental Mitigation Trust are significant adverse impacts associated with this alternative that are not associated with the proposed Project. These adverse impacts outweigh the slight reduction in adverse impacts to special-status species that would occur with this alternative.

4.7.10 Landfill Development/No Townsite Development Alternative

Compared to the proposed Project, the Landfill Development/No Townsite Development Alternative would reduce potential adverse impacts to Nelson's bighorn sheep and desert tortoise associated with escaped pets potentially kept by Townsite residents. Human activity at the landfill site would be restricted to landfill operations only. All other impacts associated with the proposed Project would be expected. Additionally, this alternative would result in more daily round trips to the landfill by employees living in other communities than the proposed Project, thus increasing road kills of desert tortoise and other wildlife species. Increase in impacts associated with the Landfill Development/No Townsite Development Alternative approximately offset reduced impacts of this alternative compared to the proposed Project.

4.8 Growth Inducement and Socioeconomics

This section presents the standards of significance for growth inducement and socioeconomics, and evaluates the impacts for growth inducement and socioeconomics, including impacts to minorities and low-income populations.

4.8.1 Standards of Significance

4.8.1.1 Growth Inducement and Socioeconomics

According to Appendix G of the California Environmental Quality Act (CEQA) Guidelines, a project would normally be considered to have a significant effect on the environment if it would induce substantial growth or concentration of population, disrupt or divide the physical arrangement of an established community, or displace a large number of people. Appendix I of the CEQA Guidelines further states that a project could have a significant effect if it alters the location, distribution, density, or growth rate of the population of an area, affects existing housing, or creates a demand for additional housing.

The significance of growth-inducing and socioeconomic impacts is driven by population growth and is typically assessed in terms of related effects on other socioeconomic resources such as housing, public services, and local government expenditures. On this basis, the following significance criteria have been developed for growth inducement and socioeconomics:

- The proposed Project would be considered to have a significant growth-inducing effect if the employment it created would induce substantial growth or concentration of population and a need for substantial increases in infrastructure requirements under one or more of the following conditions:
  - Increased demand for public services that would reduce levels of service below existing or locally acceptable levels and/or would require additional personnel or facilities
  - Increased demand for additional housing cannot be filled by available supply or by timely development of affordable and suitable housing
  - Revenue sources of local government(s) cannot meet project-induced costs (e.g., increased costs associated with public health and safety)

4.8.1.2 Impacts to Minorities and Low-Income Population

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994), requires federal agencies to make the achievement of environmental justice part of their mission by identifying and

addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. The EO further stipulates that the agencies conduct their programs and activities in a manner that does not have the effect of excluding persons from participation in, denying persons the benefits of, or subjecting persons to discrimination because of their race, color, or national origin.

Pursuant to Section 101 of EO 12989, a project would have a significantly adverse impact on environmental justice if it has a "disproportionately high and adverse human health or environmental effect" on "minority and low-income populations." The Presidential Memorandum that accompanied EO 12898 states that a National Environmental Policy Act (NEPA) document should include analysis of "effects in minority communities and low-income communities" (Subsection 5-5c).

Neither the EO nor the Presidential Memorandum specifically defines the terms "disproportionately high and adverse human health and environmental effects," "minority," "low-income," or "populations/communities"; and there is no single definition of what constitutes a low income or minority population or community.

Disproportionately High and Adverse Human Health and Environmental Effects. For the purposes of this environmental impact statement/environmental impact report (EIS/EIR), a determination of disproportionate and high adverse human and environmental effects is based on the frequency of impact. If the potential impact occurred in a minority or low-income population/community with a greater frequency than the population/community with which it is being compared, the impact would be considered to be disproportionate, and therefore significant.

Low-income and Minority Populations and Communities. The EPA defines a low-income population/community as, "a jurisdiction (i.e., census tract) having an aggregated mean income level for a family of four that corresponds to the state's standard for average low-income level" (EPA, 1994). The income qualifications for receiving public assistance from programs such as Aid to Families with Dependent Children (AFDC), food stamps, and Medicaid could also be considered to define a low-income population group. The Department of Housing and Urban Development has standards that identify a low-income household as one with a family income of 80 percent, or less, of the county median. For the purposes of this document, a low-income household is defined as one with a family income of 80 percent, or less, of the Riverside County median.

According to the White House Office of Environmental Justice, "minority" means individuals classified by Office of Management and Budget Directive No. 15 as Black/African American, Hispanic, Asian and Pacific Islander, American Indian, Eskimo, Aleut, and other nonwhite persons. The White House Office indicates that for a population to be classified as minority, the minority composition should either exceed 50 percent of, or be meaningfully greater than, the minority population percentage in the general population or other unit of geographic analysis. Further, the appropriate unit of geographic analysis may be a governing body's jurisdiction, a neighborhood, census tract or other similar unit. This EIS/EIR uses the census

tract as the geographic analytical unit (i.e., Chuckwalla Subdivision), because racial composition data are readily available from the 1990 Census. The Chuckwalla Subdivision boundary is shown in Figure 3.8-1.

Effects on Low-Income and Minority Populations and Communities. In the absence of specific federal guidance or criteria, the following significance criterion has been developed:

- The Project would have a disproportionately high, adverse health impact to minority and low-income populations if such an impact occurs with greater frequency for these populations than for the general population as a whole.

4.8.2 Growth Inducement and Socioeconomics

4.8.2.1 Proposed Action

Impacts. Project-related impacts are anticipated as a result of the temporary construction work force required for the Project, including approximately 150 temporary workers for constructing the landfill and approximately 12 workers to renovate the existing housing stock at the Townsite. The temporary construction work force for the landfill could be partially accommodated by the Townsite housing stock. Additional indirect impacts would occur in other Coachella Valley communities to accommodate remaining workers. Temporary workers at the Townsite would be housed at residences in the Townsite. These temporary workers would constitute a net positive impact both in the Townsite and in other communities.

Indirect Project-related impacts would occur as a result of the anticipated increase in population at the Townsite attributable to meeting the housing needs of landfill employees and their families. The operation of the landfill is expected to create approximately 250 permanent jobs, which is a net positive socioeconomic impact. Assuming an average annual salary of $35,000, this would result in a positive wage inflow to the County of $8,750,000 per year. With an average household size of 3.6 persons, and assuming a conservative estimate that each job would represent a household, the 250 jobs would generate a population increase of approximately 900 persons, resulting in a total population of approximately 1,120 Townsite residents. This population would be less than half of the historical high population of 3,700 Townsite residents during the peak of mining activities in the early 1960s.

Other potential indirect impacts would include additional job creation as a result of the positive economic impacts of the proposed Project. This phenomenon is known as the "multiplier effect." Using county-level data on economic output and employment from the U.S. Department of Commerce, Bureau of Economic Analysis, combined with a national average technology matrix, an employment multiplier was estimated for Riverside County using IMPLAN (Impact Analysis for Planning), an input-output software and database originally developed by the U.S. Forest Service. The results of this analysis indicated that the Riverside County multiplier for employment (1991) was approximately 1.8 -- meaning that for every new job created, approximately 0.8 additional jobs would be created in other industries.

Consequently, the proposed Project is estimated to generate an additional 200 employment opportunities elsewhere in Riverside County.

The results of the IMPLAN analysis also indicate that the Riverside County multiplier for personal income (1991) was approximately 3.0, which means that for every dollar of wage income created by the proposed Project, approximately two additional dollars of wage income also would be created. On the basis of the Project-related $8,750,000 annual wages discussed above, an additional $17,500,000 per year of wage income would be created elsewhere in Riverside County. In addition to wage income, the proposed Project is anticipated to generate an estimated $182.5 million in annual revenues, based on an average of $25 per ton tipping fees at the Project's 20,000-ton-per-day (tpd) maximum capacity.

In addition to the Townsite, the population of the neighboring communities of Lake Tamarisk and Desert Center could be expected to experience more limited population increases as a result of small-scale commercial development to serve Townsite residents. For major purchases and shopping needs, it is assumed that residents of the Townsite, Desert Center, and Lake Tamarisk will continue to rely on other eastern Riverside County communities, such as Blythe and Palm Desert.

Existing public utilities (water, sewer, electricity, and natural gas) and services (police, fire, and medical) are adequate to meet increased demands that could arise due to the proposed Project (Section 4.12, Utilities and Services). In addition, the increased demand for additional housing that could arise due to the proposed Project can be filled by the planned renovation of existing Townsite housing stock. Further, as noted in Section 4.2, Public Health and Safety, there are no substantial Project-induced costs associated with public health and safety that would adversely affect revenue sources of local government(s). Consequently, for growth inducement/socioeconomics, the proposed Project would not constitute a significant adverse impact as defined under CEQA.

Mitigation. No additional mitigation measures beyond those associated with existing requirements and aspects of the proposed Project are necessary or warranted.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design result in a potential for adverse growth-inducing/socioeconomic impacts, which are below the threshold of significance.

4.8.2.2 No Action Alternative

Impacts. The No Action Alternative would preclude the occurrence of any potential growth-inducing/socioeconomic impacts associated with the Project.

Mitigation. No mitigation measures are required for this alternative.

Significance After Mitigation. The potential for adverse growth-inducing/socioeconomic impacts is not significant for this alternative.

4.8.2.3 Reduced Volume of Onsite Disposal Alternative

Impacts. The potential impacts under this alternative would be essentially identical to those of the Proposed Action. A change in landfill volume/configuration would not substantially alter daily operations of the Project. Such a reduction would be unlikely to result in a major decrease in the number of employees needed to operate the landfill. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into a reduced-scale Project design would result in a potential for adverse growth-inducing/socioeconomic impacts, which are below the threshold of significance for this alternative.

4.8.2.4 Alternate Road Access Alternative

Impacts. The potential impacts under this alternative would be identical with those of the Proposed Action. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into an alternative road access alternative would result in a potential for adverse growth-inducing/socioeconomic impacts, which are below the threshold of significance for this alternative.

4.8.2.5 Rail Access Only Alternative

Impacts. The potential for impacts under this alternative would be identical with those of the Proposed Action. A change in landfill volume/configuration would not substantially alter daily operations of the Project. Such a reduction would be unlikely to result in a major decrease in the number of employees needed to operate the landfill. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project result in a potential for adverse growth-inducing/socioeconomic impacts, which are below the threshold of significance for this alternative.

4.8.2.6 Landfill on Kaiser Land Only Alternative

Impacts. The potential impacts under this alternative would be similar to those of the Proposed Action. A change in landfill volume/configuration would not alter daily operations of the Project. Such a reduction would likely result in an approximate 60 percent decrease in the number of employees needed to operate the landfill, which would reduce the economic benefits associated with employment. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project result in a potential for adverse growth-inducing/socioeconomic impacts, which are below the threshold of significance for this alternative.

4.8.2.7 Landfill Development/No Townsite Development Alternative

Impacts. The Landfill Development/No Townsite Alternative would preclude the potential for growth-inducing impacts associated with an increase in population at the Townsite. Elimination of further renovation of the Townsite would not alter daily operations of the Project, and would be unlikely to result in a major decrease in the number of employees needed to operate the landfill. However, elimination of further Townsite development would tend to dilute the overall potential growth-inducement impacts by dispersing required landfill employees among several existing desert communities. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project result in a potential for adverse growth-inducing/socioeconomic impacts, which are below the threshold of significance for this alternative.

4.8.3 Impacts to Minorities and Low-Income Populations

4.8.3.1 Proposed Action

Impacts

Disproportionately High and Adverse Human Health Effects. As noted in Sections 4.2 (Public Health and Safety), 4.4 (Air Quality), and 4.4 (Traffic and Transportation), no potentially significant, Project-related health and safety risks to any member of the general population located adjacent to the proposed Project or along Project-related transportation corridors have been identified. Consequently, there is no evidence to suggest that the proposed Project would represent a disproportionately high or adverse (and therefore significant) human health risk to minority and low-income populations or communities as defined under Section 4.8.1.2, Standards of Significance.

Disproportionately High and Adverse Environmental Effects. Review of the potential environmental effects associated with the proposed Project, as presented throughout Chapter 4, Environmental Consequences, has identified no potentially adverse, significant, or unmitigated environmental impacts affecting a minority or low-income population/ community with a greater intensity, duration, or frequency than the general population. Consequently, there is no evidence to suggest that the proposed Project would represent a disproportionately high or adverse (and therefore significant) environmental risk to minority and low-income populations/communities as defined under Section 4.8.1.2, Standards of Significance.

Effects on Low-Income Populations and Communities. County-level income data in the Project vicinity do not accurately reflect the characteristics of the populations/communities likely to be affected by the Project. For example, according to 1990 U.S. Census Bureau data, median family income in Riverside County was $37,694. Applying the Housing and Urban Development (HUD) 80 percent criterion yields a median "low-income" level of $30,155. In contrast, 1990 U.S. Census Bureau data indicate that the median family income in Census Tract 458 (Chuckwalla Valley) was $25,347, which, under the HUD definition, would mean that the entire Census Tract would be defined as low income.

Approximately 37 percent of the total Chuckwalla Subdivision households surveyed for the 1990 Census reported no wage or salary income, whereas approximately 14 percent of the households surveyed were reported to be on public assistance income. In contrast, 1990 Riverside County census data identify 11.5 percent of the population at the poverty level and 4.7 percent of the population below the 50 percent poverty level.

Riverside County income levels are inflated by the incomes of residents in Indian Wells, Rancho Mirage, Palm Springs and other affluent communities and do not accurately represent the average income of residents in the County as a whole and the vicinity of the proposed Project in particular. Implementation of the proposed landfill will create a substantial

number of new Project-related jobs, as well as set the stage for the further economic growth for the Townsite.

There is no evidence of potentially adverse, significant, or unmitigated socioeconomic impacts affecting a low-income population/community with a greater intensity, duration, or frequency than the general population. Project-related socioeconomic affects appear likely to be of a positive nature, potentially benefiting the employment and income levels of a population whose economic characteristics fall below those of the Riverside County median level. Consequently, there is no evidence that the proposed Project would represent a disproportionately high or adverse (and therefore significant) impact to minority and low-income populations/communities as defined under Section 4.8.2.1, Standards of Significance.

Effects on Minority Populations and Communities. According to the White House Office of Environmental Justice, for a population to be classified as minority, the minority composition should either exceed 50 percent, or be meaningfully greater than the minority population percentage in the general population or other unit of geographic analysis. The composition of the general population, as reported in the 1990 U.S. Census, for the State of California, Riverside County, and the Chuckwalla Subdivision (Census Tract 458), is displayed in Table 4.8-1. In the Chuckwalla Subdivision, the minority population neither exceeds 50 percent nor is greater than the comparable representation of the minority population in either the County of Riverside or the State of California.

Table 4.8-1
Population Data (Percent)
(U.S. Census Bureau—1990)

California	Riverside County	Coachella Valley Division	Chuckwalla Subdivision
White—69.1	White—76.5	White—54.2	White—57.4
Black—7.4	Black—5.4	Black—2.3	Black—18.5
Hispanic—25.4	Hispanic—25.8	Hispanic—71.9	Hispanic—24.0
Asian/Pacific Islander—9.6	Asian/Pacific Islander—3.6	Asian/Pacific Islander—1.6	Asian/Pacific Islander—0.0
American Indian, Eskimo, Aleut—0.8	American Indian, Eskimo, Aleut—1.0	American Indian, Eskimo, Aleut—0.7	American Indian, Eskimo, Aleut—2.0
Other—13.1	Other—13.5	Other—41.2	Other—23.9

Note: Race, as used by the Census Bureau, is not meant to denote any scientific or biological component of race. The subgroups displayed in this table represent the self-categorization of respondents (i.e., individuals identifying themselves as Hispanic could also be included under other ethnic classifications; therefore, the percentages could exceed 100 for a geographical area).

In addition, a review of the potential environmental effects associated with the proposed Project, as presented throughout Chapter 4, Environmental Consequences, has identified no evidence of potentially adverse, significant, or unmitigated environmental impacts affecting a minority population or community with a greater intensity, duration, or frequency than the general population. Consequently, the proposed Project would not represent a disproportionately high or adverse (and therefore significant) impact to minority and low-income populations/communities as defined under Section 4.8.1.2, Standards of Significance.

Mitigation. No additional mitigation measures beyond those associated with existing requirements and aspects of the proposed Project are necessary or warranted.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project result in a potential for adverse impacts to minority and/or low-income communities, which are below the threshold of significance.

4.8.3.2 No Action Alternative

Impacts. The No Action Alternative would preclude the occurrence of any positive socioeconomic impacts associated with the Proposed Action.

Mitigation. No mitigation measures are required for this alternative.

Significance After Mitigation. The potential for adverse impacts to minority and/or low-income communities is not significant for this alternative.

4.8.3.3 Reduced Volume of Onsite Disposal Alternative

Impacts. The potential impacts under this alternative would be essentially identical to those of the Proposed Action. A change in landfill volume/configuration would not substantially alter daily operations of the Project. Such a reduction would be unlikely to result in a major decrease in the number of employees needed to operate the landfill. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design result in a potential for adverse impacts to minority and/or low-income communities, which are below the threshold of significance for this alternative.

4.8.3.4 Alternate Road Access Alternative

Impacts. The potential impacts under this alternative would be identical with those of the Proposed Action. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project result in a potential for adverse impacts to minority and/or low-income communities, which are below the threshold of significance for this alternative.

4.8.3.5 Rail Access Only Alternative

Impacts. The potential for impacts under this alternative would be identical with those of the Proposed Action. A change in landfill volume/configuration would not substantially alter daily operations of the proposed Project. Such a reduction would be unlikely to result in a major decrease in the number of employees needed to operate the landfill. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project result in a potential for adverse impacts to minority and/or low-income communities, which are below the threshold of significance for this alternative.

4.8.3.6 Landfill on Kaiser Land Only Alternative

Impacts. The potential impacts under this alternative would be identical with those of the Proposed Action. A change in landfill volume/configuration would not alter daily operations of the Project. Such a reduction would be unlikely to result in a major decrease in the number of employees needed to operate the landfill. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project result in a potential for adverse impacts to minority and/or low-income communities, which are below the threshold of significance for this alternative.

4.8.3.7 Landfill Development/No Townsite Development

Impacts. Because daily operations of the Project would not be altered, the potential impacts under this alternative would be identical with those of the Proposed Action. The positive socioeconomic effects associated with further growth and development of the Townsite would not take place; however, the number of employees needed to operate the landfill would be unaffected. Consequently, the net benefits of job creation would still accrue to the proposed Project; and the workforce required conceivably would be drawn from a larger local area within the Chuckwalla Subdivision. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the design of the proposed Project result in a potential for adverse impacts to minority and/or low-income communities, which are below the threshold of significance for this alternative.

4.9 Geology and Mineral Resources

This section evaluates the Proposed Action and the alternatives to assess their potential to impact the geologic and mineral resources in the vicinity of the proposed Project. Standards of significance are presented for soil and geologic conditions, seismicity, and mineral resources. Impacts to the bedrock and alluvium are presented in Section 4.9.2 (Soil and Geologic Conditions). Seismic issues, including a discussion of the previous Court ruling, a general discussion of earthquakes, and a performance comparison of the effects of earthquakes on select Southern California landfills, are presented in Section 4.9.3 (Seismic Hazards). Impacts related to mineral resources are discussed in Section 4.9.4 (Mineral Resources). Although all the components of the proposed Project (i.e., the landfill, Townsite, land exchange, and rights-of-way) are discussed, the primary focus of this impact analysis is the proposed landfill because the comments raised in scoping meetings for this environmental impact statement/environmental impact report (EIS/EIR) and the Court's ruling (see Section 4.9.3.1 below) focus on potential seismic effects on the landfill. Additional data on seismicity are contained in Appendix H of this EIS/EIR.

4.9.1 Standards of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant impact if it would "Expose people or structures to major geological hazards." Geologic hazards could include earthquakes, landslides, mudslides, ground failure, or similar hazards. Appendix I of the CEQA Guidelines further states that potential environmental impacts related to geology could be considered significant if they result in: (1) unstable earth conditions or changes in geologic substructures, disruptions, displacements, compaction, or overcovering of the soil; (2) changes in topography or ground surface relief features; or (3) destruction, covering, or modification of any unique geologic or physical feature. Consistent with these criteria, the following standards of significance have been developed to evaluate impacts pertaining to geologic resources, seismicity, and mineral resources attributable to the proposed Project.

4.9.1.1 Soil and Geologic Conditions

- An impact attributable to the proposed Project would be considered significant if the Project does not meet the applicable landfill siting criteria set forth by regulation, as defined in Title 23, California Code of Regulations (CCR), Division 3, Chapter 15, Title 14, CCR, Division 7, and 40 Code of Federal Regulations (CFR) Part 258, Subpart B (Location Restrictions) or if an impact would expose people or workers in the Project area to major geologic hazards.

This would include the presence of geologic conditions such as unstable or compressible soils and liquefaction that would contribute to the destruction or severe damage (e.g., destabilization) of structures during a geologic event and could endanger the lives of landfill personnel or other persons in the Project area.

4.9.1.2 Seismic Hazards

- A seismic hazard attributable to the Project would be considered significant if:
  - As a result of the occurrence of the maximum probable earthquake event, the landfill facility waste containment structures, including the engineered foundation and composite liner system, were to fail, causing a release of landfill leachate or landfill gas from the landfill waste management unit adversely affecting the beneficial uses of ground or surface water
  - The location of the landfill and the design of engineered structures do not meet the applicable seismic siting restrictions and design requirements set forth in Title 23, CCR Division 3, Chapter 15, and the provisions of the federal Subtitle D Regulations, 40 CFR Part 258 relative to seismic location restrictions and design requirements for municipal solid waste landfills.

The State of California has regulatory jurisdiction of landfills in California because the state's solid waste program has been approved by the Environmental Protection Agency (EPA). The state regulations require that "waste management units shall be designed to withstand the maximum probable earthquake without damage to the foundation or to the structures which control leachate, surface drainage, erosion, or gas" (Title 23, CCR, Division 3, Chapter 15, Section 2547). In addition, "the operator shall ensure the integrity of final slopes under both static and dynamic conditions" (Title 14, CCR, Division 7).

Federal regulations require that an "owner or operator demonstrates . . . . that all containment structures, including liners, leachate collection systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in lithified earth material for the site" (40 CFR, Part 258, Subpart B, Section 258.14).

When state and federal regulations conflict, the more stringent regulation will be used to establish impact significance. Severe seismic hazards would include the presence of an active fault onsite and the presence of other geologic conditions that would directly or indirectly endanger the lives of landfill personnel or of other persons in the Project area (e.g., if chemicals were released into the environment in the instance of a geologic event).

4.9.1.3 Mineral Resources

- The proposed Project would have a significant adverse impact on mineral resources if the loss of existing mineral resources could not be mitigated by domestic reserves.

- Impacts to mineral resources would be considered significant if the Project would affect the existing or potential future economic production of a mineral resource, either by limiting access to the resource or degrading the quality of the resource, or if the Project would eliminate access to a potential mineral resource that has been determined by a regulating agency to be rare, unique, or regionally significant.

4.9.2 Soils and Geologic Conditions

4.9.2.1 Proposed Action

Impacts. The Project site is not located within an area of potential rapid geologic change or in a geologically unstable area. This impact evaluation for soils and geologic conditions addresses compressible soils, collapsible soils, expansive soils, and slope stability.

On the basis of the extensive soils and geologic evaluation of the Project area conducted for the landfill site (GeoSyntec, 1992), the foundation of the proposed landfill footprint is predominantly very hard bedrock. The bedrock is composed of crystalline rocks (granitic and metamorphic) that are essentially incompressible, noncollapsible, and nonexpansive. Ancient (i.e., pre-Quaternary) faults within the bedrock could contain clayey material that is expansive or compressible. These materials are, however, contained within very thin (i.e., 2 to 12 inches thick) layers and, therefore, are not considered significant with regard to foundation conditions. Natural and engineered slopes within the bedrock ore are very stable and are not considered significant for slope stability.

A small portion of the eastern limit of the proposed landfill would overlie unconsolidated sediments (alluvium). The alluvial sediments are predominantly very coarse grained and dense and, therefore, are generally not expansive. These sediments are compressible; but, because of their density and coarse-grained granular nature, they will behave elastically (i.e., like a spring) and compress as load is applied. There will be little or no time-dependent or long-term impacts. In addition to the coarse-grained sediments, there are thin (up to 3 feet thick) layers of fine-grained soils associated with old soil horizons or debris flows that could be expansive or compressible within these sediments; and there could be occasional thin layers of collapsible soil within both the fine- and coarse-grained alluvium. Development of the proposed landfill could increase the potential for collapse or compression of soil layers in the alluvium as a result of the weight of the landfill in combination with increased moisture in subsurface soils. The potential results of collapse or compression of soils underlying the landfill are subsidence of the ground beneath the landfill and the surface of the landfill. Expansive soils could result in ground heave or subsidence depending on moisture conditions. Because the overwhelming majority of the soils affected by the proposed Project are coarse-grained, dense alluvium that is nonexpansive and noncompressable, the potential impacts associated with the minor amounts of fine-grained sediments are not significant.

The natural slopes and slopes excavated during mining operations in the bedrock and alluvium are generally very stable. No major landslides or unstable slope conditions are present within the bedrock or alluvium portions of the site. The existing engineered slopes within the mine pits are very steep (i.e., 1.5 to 1 horizontal to vertical) and are up to 500 feet high. These slopes are benched and therefore contain many short (20 to 30 feet) vertical slopes and intervening nearly level benches. Some of these slopes were excavated during the early phases of the mining operation more than 40 years ago and have remained generally stable during periods of adverse weather conditions and seismic shaking since that time.

Small surficial sloughing is present within the excavation on some of the benches. Sideslopes of natural drainages within the bedrock and alluvium are near vertical in some areas of the site. The vertical engineered and native slopes in both bedrock and alluvium attest to the inherently high strengths of both of these materials. Because of the buttressing effects of the landfill construction and filling process, construction of the proposed landfill would result in increased stability of both the engineered and natural slopes.

Engineered slopes associated with the Proposed Action have all been designed to be stable. These slopes have been designed to meet and/or exceed all applicable regulations (i.e., Title 14, CCR, Division 7; Title 23, CCR, Division 3, Chapter 15; and 40 CFR, Part 258) for both short-term and long-term, static, and dynamic loading. A comprehensive discussion of the design slopes and the stability evaluation is presented in Appendix H-1.

The other components of the proposed Project (i.e., Townsite repopulation, right-of-way grants, and land exchange) could affect expansive soils, collapsible soils, and compressible soils due to the introduction of moisture to subsurface soils. Slope stability will not be affected by the other components of the proposed Project because there are no existing or planned slopes associated with those aspects of the proposed Project.

Mitigation. Impacts within the bedrock portions of the proposed landfill would not be significant; therefore, no mitigation would be required in the bedrock portions of the proposed landfill. Limited quantities of compressible, collapsible, or expansive soils are known to occur below portions of the site. The extent of those soils will be further evaluated during geotechnical exploration and grading of the landfill. Landfill design will include mitigation of any collapsible, compressible, or expansive soils encountered in the alluvial portions of the foundation area. Mitigation would include overexcavation, prewatering, and recompaction of the foundation soils. If the results of the geotechnical exploration and subsequent laboratory testing and analyses indicate that there is significant collapse potential of the foundation soils, they will be removed or improved in place and replaced. Non-collapsible soils will be placed in a controlled manner to meet the requirements of the approved construction plans and specifications. In addition, a stabilization fill will be placed and compacted throughout the bottom of the landfill below the liner system to create a smooth, stable foundation layer. Landfill design will include mitigation of any unstable slopes within the landfill area.

Comprehensive stability analyses already have been completed for several different categories of geologic conditions both to identify required properties of engineered materials and to demonstrate adequate factors of safety over a range of conditions for the proposed design. The analyses described in Section 8 and Supplemental Volume 1 of the ROWD (GeoSyntec, 1992) were performed for the range of conditions that will be present at every major stage of landfill development, incorporating potential adverse geologic conditions with respect to existing slope geometries and construction-phase conditions of cut slopes. The full range of azimuths (0° to 360°) that encompasses a compilation of all available fracture data for the site was analyzed for slope inclination as steep as 0.75 H:1V (53°). The adopted slope geometries for landfill development are shown to be stable for all of the analyzed conditions.

The analyses demonstrate that the proposed landfill designs for natural and cut slopes satisfy the requirements of §2533(e) (i.e., rapid geologic change) of Chapter 15 and §258.15 (i.e., unstable areas) of 40 CFR.

In addition, as described in Section 2.1.6.1 of this EIS/EIR, site-specific stability analyses of each slope in each subphase of development will also be analyzed during the construction-level design of each subphase. At that time, additional site-specific geologic data (i.e., joint and shear orientations) will be incorporated into stability analyses of each slope. The results of these analyses will be presented in the design documentation prepared for each new subphase and submitted to the Regional Water Quality Control Board (RWQCB) for review and approval.

The other components of the proposed Project will be mitigated through design of drainage structures to control surface water runoff and reduction of infiltration of runoff water into subsurface soils.

Significance After Mitigation. Impacts of the Project on soils and geology as described in this section are considered not significant for the bedrock portion of the site. The design measures incorporated into the proposed Project in the alluvial soil areas reduce impacts to below the level of significance.

4.9.2.2 No Action Alternative

Impacts. The No Action Alternative would preclude the occurrence of any potential impacts of the landfill on soils and geology within the Project boundary. The beneficial impact associated with the proposed Project (i.e., the increased stability of the mine slopes due to the buttressing of the slopes with refuse) would not occur. The reclamation plan for the mine site, which was developed by Kaiser Steel in 1976 and approved by the County, would be implemented. The reclamation plan requires only limited reclamation activities (e.g., removing equipment and limiting public access to the former mine site), and the site would remain in its existing disturbed condition.

Mitigation. No mitigation measures are required for this alternative. The reclamation of the mine would proceed in accordance with existing plans. The current reclamation plan provides general guidelines for restricting access to the site and removal of equipment. There is no plan for restoration of the mine excavation slopes.

Significance After Mitigation. The impacts to soils and geology would be below the level of significance.

4.9.2.3 Reduced Volume of Onsite Disposal Alternative

Impacts. The potential impacts under this alternative essentially would be identical to those of the proposed Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. Impacts of this alternative are not considered significant. The mitigation measures for the Proposed Action would reduce potential impacts to below the level of significance.

4.9.2.4 Alternate Road Access Alternative

Impacts. The potential impacts under this alternative essentially would be identical to those of the Proposed Action. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. Impacts of this alternative are not considered significant. The mitigation measures listed for the Proposed Action would reduce potential impacts to below the level of significance.

4.9.2.5 Rail Access Only Alternative

Impacts. The potential impacts under this alternative essentially would be identical to those of the Proposed Action. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. Impacts of this alternative are not considered significant. The mitigation measures for the Proposed Action would reduce potential impacts to below the level of significance.

4.9.2.6 Landfill on Kaiser Land Only Alternative

Impacts. Although a smaller area would be used for landfilling waste, the potential impacts under this alternative essentially would be identical to those of the Proposed Action. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. Impacts of this alternative are not considered significant. The mitigation measures for the Proposed Action would reduce potential impacts to below the level of significance.

4.9.2.7 Landfill Development/No Townsite Development Alternative

Impacts. The potential impacts under this alternative essentially would be identical to those of the Proposed Action. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. Impacts of this alternative are not considered significant. The mitigation measures for the Proposed Action would reduce potential impacts to below the level of significance.

4.9.3 Seismic Hazards

4.9.3.1 Superior Court Ruling on Previous EIR

In response to legal actions challenging the County's certification of the previous EIR (see Section 1.2.1), the San Diego County Superior Court issued a Statement of Decision in 1994 ruling that the EIR was deficient in certain specific areas (see Section 1). In reference to the geology of the proposed Project area, the Court ruled on the issue of seismicity. Specifically, the Court addressed:

- The ability of the landfill liner to withstand seismic activity (and the related issue of the ability of the containment system of the landfill to capture and control leachate) in the event of an earthquake

- The opportunity for the public to comment on studies conducted on the existence of Holocene faults

Specifically, the Court ordered the County to "fully analyze in a manner supported by substantial evidence the potential impact of seismic activity on the landfill, including establishing by substantial evidence the supportability of the conclusions that liners for the project will withstand seismic activity and/or that the landfill's containment system has the ability to capture and control leachate, and providing an explanation supported by substantial evidence regarding the existence, or lack thereof, of any Holocene fault in the vicinity of the landfill."

Extensive evaluations of seismicity and faulting have been conducted for the Project site. The two major issues that were evaluated are: (1) active faulting and (2) the probability that

an earthquake will occur in proximity to the site and cause damage to structures and landfill components. (A complete list of the studies conducted is in Chapter 9, References Cited, and a summary list is presented in Section 3.9 of this EIS/EIR.)

4.9.3.2 Applicable State and Federal Regulations for Seismicity

The following state and federal regulations are pertinent to landfill siting and seismicity. Other regulations applicable to landfill siting are discussed in Chapter 2 and Appendix B of this EIS/EIR.

- Title 23, CCR, Chapter 15, Article 3: Waste Management Unit Classification and Siting
  - Section §2533 Siting Criteria for Class III Landfills
  - (a) Landfill shall be designed to withstand the maximum probable earthquake without damage to the foundation or to the structures that control leachate, surface water, erosion, or gas.
  - (d) Landfill shall not be located on a known Holocene fault (i.e., movement in last 11,000 years).
- 40 CFR Part 258, Subpart B, §258.15(a): Unstable Areas
  - (a) Design must incorporate engineering measures to ensure the integrity of the structural components of the landfill in unstable areas.
- 40 CFR Part 258, Subpart B, §258.13 (a): Location Restrictions–Fault Areas
  - The landfill shall not be located within 200 feet (61 m) of a fault that has had displacement in Holocene time.
  - §258.14 (a). Seismic Impact Zones
  - The landfill shall not be located in seismic impact zones unless it can be demonstrated that all containment structures are designed to resist the maximum horizontal acceleration in lithified earth material.

In addition, criteria set forth in state and federal regulations governing groundwater (Title 23, CCR, Division 3, Chapter 15, Section 2550, and 40 CFR Part 258, Subpart E, Section 258.50) provide standards for protection of groundwater. A detailed discussion of groundwater is in Sections 3.1 and 4.1 of this EIS/EIR.

The renovation associated with the Townsite is subject to provision of the Uniform Building Code (UBC), which contains requirements for seismic evaluation and design of structures. The UBC is not applicable to evaluating landfill design. The Uniform Housing Code (UHC)

is used to assess existing occupied structures within the Townsite. In general, the UHC requirements reference the UBC for regulatory compliance with seismic issues. The UHC does, however, contain a provision for the local building official to use portions of the UHC that are applicable on a case-by-case basis.

4.9.3.3 General Discussion of Faulting and Seismicity (including Holocene Faulting)

Faults are fractures in the earth's crust along which bedrock is displaced or offset as a result of pressures within the earth. An active fault is one where displacement has occurred within the last 11,000 years or so, which is a period in time that is referred to as the Holocene Epoch.

Earthquakes are vibrations of the earth caused by sudden movement of the bedrock on either side of an active fault. The vibration of the earth results when bedrock on either side of the fault breaks loose from its original position and then snaps into a new position. In the process of rebounding, vibrations called seismic waves are generated. The primary effect of earthquakes is the violent ground motion accompanying movement along a fault. Secondary effects include ground rupture, landslides, tsunamis (i.e., tidal waves), lurching, regional or local subsidence of the land, and liquefaction. Liquefaction is a geologic process in which soil that is saturated loses its strength or stiffness as a result of increased pore pressures resulting from ground shaking during earthquakes. Liquefaction is most likely to occur in recent geologic deposits, especially sandy soils, that have a high groundwater table.

The federal (40 CFR 258) regulations for landfill siting require that landfills should not be located near an active or Holocene fault ground rupture occurring during the last 11,000 years. Site specific investigations have demonstrated that active faulting has not occurred within 200 feet of the Eagle Mountain Landfill site, as required by federal regulations (Appendices H-1, H-3, H-4, and H-5). This conclusion is based on site-specific geologic field mapping and trench logging, analyses of aerial photography, soil stratigraphy, reconnaissance of fault scarps by aircraft, geomorphology, and age dating of rock materials (Appendices H-1, H-3, H-4, and H-5). As stated by Shlemon in ROWD Supplemental Volume 2 (GeoSyntec, 1993), "...all Quaternary (younger than 1.6 million years) deposits were visibly continuous where either overlying bedrock faults, or where lying across projections of these faults. The Eagle Mountain fan deposits have thus provided excellent geomorphic and soil stratigraphic markers from which to assess the relative activity of bedrock faults identified in the proposed landfill site." Based on these studies, the last instance of active faulting at the site occurred at least 40,000 years ago and could have occurred as much as 100 million years ago.

Three nearby faults (i.e., Substation, Victory Pass, and Blue Cut) were studied that are not within 200 feet of the site footprint, but could be significant to the proposed Project (Appendix H-1, 1992). They range in location from 3 to 6 miles from the site. The faults were extensively evaluated including microseismic studies, aerial photograph analysis, kinematic evaluation, scarp erosion analysis, and geomorphic studies (Schell, 1992). Based

on this evaluation, it was concluded that some of the features observed along the Blue Cut fault could represent late Pleistocene (i.e., pre-Holocene) movement along a short segment of the eastern portion of the fault approximately 4 miles from the Project site. There is no evidence of Holocene-era faulting on any of these three faults evaluated near the Project site (Appendix H-1).

4.9.3.4 Comparison of Earthquake Effects on Landfills

Of the more than 100 active and inactive landfills in Southern California, many are located in areas with high levels of seismic activity. Various evaluations of landfills following recent seismic events have been conducted by universities, engineering consulting firms, and regulatory agencies to assess the response of the landfills to seismic shaking. These recent observational performance data illustrate the ability of solid waste landfills to withstand strong ground shaking from earthquakes without sustaining major, irreparable impacts.

Three recent earthquakes in California provide the best available data on the performance of solid waste landfills under conditions of strong ground shaking. These earthquakes and their recorded magnitudes (M) on the Richter scale are:

- Northridge Earthquake of January 17, 1994 (M = 6.7)
- Whittier Narrows Earthquake of October 1, 1987 (M = 6.1)
- Loma Prieta Earthquake of October 17, 1989 (M = 7.1)

Relevant observations of the performance of landfills in these three earthquakes are summarized in Appendix H-2 of this EIS/EIR. Another recent source of information on landfill performance during earthquakes is *Earthquake Design and Performance of Solid Waste Landfills* (American Society of Civil Engineers, Geotechnical Special Publication No. 54, 1995).

Northridge Earthquake

Observations of landfill performance in the Northridge earthquake (M = 6.7 Richter), which occurred on January 17, 1994, are of particular interest because that earthquake provides direct evidence of the ability of geosynthetic-lined landfills designed in accordance with the standards of Title 23, Chapter 15 to withstand strong ground motions. The main shock of the Northridge earthquake occurred near the north end of the San Fernando Valley in the Los Angeles metropolitan area. Numerous active, inactive, and closed solid waste landfills are located within 62 miles of the epicenter of that earthquake. Twenty-two landfills were evaluated as part of a study to assess damage resulting from the earthquake (Matasovic et al, 1995). Twelve of these landfills were within 20 miles of the epicenter of the associated earthquake. A summary of the seismic performance at the 21 landfills for which there are complete data is presented in Table 4.9-1 (of the 22 landfills assessed, one reported only partial findings and is excluded from analysis in this EIS/EIR).

For the purposes of comparative assessment of the landfill performance, the following criteria for damage to landfills were developed by Matasovic for the study referenced above:

- Major (V): A breach of the waste containment system and release of contaminants to the environment
- Significant (IV): Impairment of the containment system, but no release of contaminants
- Moderate (III): Could be repaired within 48 hours by landfill staff, with no compromise of the integrity of the waste system
- Minor (II): Slight damage with no immediate repair needed
- Little or No Damage (I): No damage

Of the 21 landfills surveyed, none suffered major damage; 2 suffered significant damage; 5 suffered moderate damage; and 14 suffered minor or no damage. None of the landfills surveyed in the Matasovic study was designed to meet the stringent Federal Subtitle D seismic standards (see Section 3.9.2.4), and it is unlikely that the ones closest to the epicenter were designed to withstand the accelerations they actually experienced. Three of the landfills subject to the strongest shaking in the Northridge earthquake have geosynthetic composite liner systems similar to the liner proposed for the Eagle Mountain Landfill. Two of these landfills, Lopez Canyon and Bradley Avenue, withstood the earthquake without damage to their geosynthetic liner systems. At both sites, local tears in the cushion geotextile overlying the side slope liner above the waste were observed. The tears, however, were caused by operating equipment and were not attributable to earthquake ground motions. Other observed damage included cover soil cracking and damage to the gas recovery system. At both landfills, earthquake-induced damage was repaired quickly by landfill staff with no disruption to landfill operations.

The third lined landfill is Chiquita Canyon Landfill (Chiquita). This landfill is the furthest of the three from the earthquake epicenter. Two torn parts of the geomembrane portion of the liner system near the geomembrane anchor trenches above the area of active disposal were reported as a result of the Northridge earthquake. The underlying low-permeability soil liner was not damaged at either location. There was no known release of leachate or landfill gas that impacted the groundwater or surface water.

Table 4.9-1
Seismic Response of Solid Waste Landfills During the January 17, 1994, Northridge Earthquake

Solid Waste Landfill	Epicentral Distance (miles)	Distance From Zone of Energy Release (miles)	Estimated Peak Horizontal Acceleration (g)	Damage Category (I-V)	Damaged Element
1. OII	27.9	26.7	0.25-0.26	Minor Damage (II)	Cover Soil
2. Chiquita Canyon	16.0	7.6	0.39	Significant Damage (IV)	Cover Soil: 2 Geomembrane Liner Tears
3. Sunshine Canyon	8.5	4.4	0.52	Moderate Damage (III)	Cover Soil
4. Lopez Canyon	10.5	5.2	0.44	Moderate Damage (III)	Cover Soil: Gas System
5. Bradley Avenue	9.5	6.7	0.45	Significant Damage (IV)	Cover Soil
6. Calabassas	9.5	14.4	0.25	Moderate Damage (III)	Gas System: Cover Soil
7. BKK	38.5	35.5	0.14	No Damage (I)	None
8. Azusa	37.5	32.1	0.10	No Damage (I)	None
9. Bishop Canyon	17.8	19.1	0.30	Little Damage (I)	Cover Soil
10. Toyon Canyon	14.5	13.8	0.25	Minor Damage (II)	Cover Soil: Gas Collection Headers
11. Sheldon-Arieta	7.9	6.7	0.51	Minor Damage (II)	Cover Soil: Gas Collection Headers
12. Scholl Canyon	21.0	17.6	0.26	Moderate Damage (III)	Cover Soil
13. Palos Verdes	32.0	31.6	0.12	No Damage (I)	None
14. Mission Canyon	8.7	11.4	0.40	No Damage (I)	None
15. Puente Hills	33.5	30.9	0.11	No Damage (I)	None
16. Simi Valley	17.0	13.9	0.28	Minor Damage (II)	Cover Soil: Gas System: Leachate Pump
17. Russel Moe	10.0	4.9	0.44	Moderate Damage (III)	Cover Soil
18. Palmdale	35.0	25.5	0.07	Minor Damage (II)	Cover Soil
19. Savage Canyon	35.0	32.8	0.16	No Damage (I)	None
20. Terra Rejada	17.5	13.9	0.27	Minor Damage	Cover Soil
21. Spadra	44.0	34.2	0.06	No Damage (I)	None

Source: Matasovic et al, 1995.

The geomembrane tears at Chiquita occurred due to a probable combination of two conditions (Augello, et al, 1995; EMCON, 1994):

1. One tear originated at a location where destructive seam test samples of the geomembrane had been removed during construction testing. These sample locations had been repaired by welding a covering patch of the geomembrane material onto these areas. Improper welding equipment and techniques can cause damage to the surrounding geomembrane resulting in a hardening of the material and a corresponding reduction of strength properties. These areas of weakness may have caused the pre-existing cracks.

2. Both tears occurred in a portion of the geomembrane located near anchor trenches. (An anchor trench is the area at the top of a landfill slope where the geomembrane is anchored into the ground.) Static (i.e., preseismic stresses) are greatest in a geomembrane liner near anchor trenches under normal conditions.

The Eagle Mountain Landfill has been designed taking all of these factors into account. First, employing the best possible construction quality assurance practices in the field combined with using qualified, experienced contractors to construct the liner will reduce the possibility of weakening the geomembrane at sample locations. Second, the operation of the Eagle Mountain Landfill will be performed in accordance with a comprehensive operations plan as described in the ROWD (GeoSyntec, 1992). The operations plan will include specific limitations to the refuse mass height-to-width ratio. The maximum height-to-weight ratio has been designed to provide an adequate factor of safety against refuse mass instability in both static and dynamic conditions. In addition, the California Department of Water Resources, Dam Safety Division, reviewed the seismic design of the proposal landfill and made recommendations for the design of the liner system that were incorporated into the permit approved by the RWQCB in 1994.

According to the performance assessment report (Appendix H-2), landfills designed to California Chapter 15 seismic standards performed well during the seismic events examined. This conclusion is reinforced by the various studies by universities, consultants, and regulatory agencies (see Section 9, References Cited). There were no reports of lined landfills experiencing significant damage, as defined within the context of CEQA, that resulted in a release of leachate to the environment. Damage that was observed was typically limited to temporary disruption of electrical service affecting active landfill gas (LFG) collection system operation, LFG control piping breakage, and cracking of interim cover soils at transition points (i.e., at the surface where natural ground and waste fill intersect). In all the reported cases of damage to landfill structures, the damages were repaired; and operation of the landfills was continued. There were no detected releases from the facilities.

Whittier Narrows

The epicenter of the Whittier Narrows earthquake (M = 6.1 Richter) of October 1, 1987, was located at the eastern edge of the Los Angeles Basin, near the boundary of the Whittier Narrows and the San Gabriel Valley to the east. Information for five landfills was evaluated with regard to performance at the landfills following the earthquake. Two of the landfills, the Operating Industries, Inc., (OII) Landfill and the Puente Hills Landfill, were within the zone of very strong ground motion. The other three landfills, Savage Canyon, BKK, and Azusa, were subject to ground motions of moderate to strong intensity. None of these landfills is reported to have suffered damage resulting in a release, and only the OII Landfill is reported to have suffered minor damage. The BKK Landfill is the only one of the five with an in-place liner system at the time of the earthquake. No damage to the liner at the BKK Landfill was observed following the earthquake.

Visual observations at the OII Landfill immediately following the Whittier Narrows earthquake identified ground cracking in cover soils on the benches of steep (1.3H:1V) side slopes. There was, however, no evidence of waste slope instability or releases of leachate or landfill gas that impacted ground or surface waters due to the seismic event.

Loma Prieta

The Loma Prieta earthquake (M = 7.1 Richter) of October 17, 1989, was located in the Santa Cruz Mountains at the southern end of the San Francisco Bay area. Inspections were performed on approximately 15 unlined landfills near the epicenter of the earthquake. Only minor damage was reported at any of the 15 landfills. The most common type of observed damage was minor cracking of the cover soil on the landfill slopes. Repair of the earthquake-induced cracks was performed as part of routine landfill maintenance activities without disruption to landfill operations. Cracking of cover soils was most common at transitions between different material types (i.e., waste fill and natural ground) and changes in slope geometry. Typical crack displacements were on the order of 1 to 3 inches. At one site, minor movement of downslope cover soil was observed. Landfill gas recovery systems were temporarily affected by power loss and aboveground pipe breakage at a number of landfills. All the landfill gas recovery systems, however, were repaired and back in operation within 24 hours of the earthquake; and no postearthquake changes in quantities of leachate and landfill gas recovery were reported. In general, the landfills experienced only minor damage that was quickly repaired following the earthquake; and no releases from the landfills were detected. There were no known releases of leachate or landfill gas that impacted groundwater or surface water as a result of the seismic event.

4.9.3.5 Uniform Building Code

In addition to affecting the performance of landfills in areas of Southern California, the Northridge earthquake exposed a large urban building stock to intense shaking. A study of the effects of the earthquake was commissioned by the Governor of California, and the California Seismic Safety Commission published a report of the results in 1995 (Seismic Safety Commission, 1995). The report discusses the following issues related to the response of buildings during the earthquake:

- The quality of design and construction must be improved.
- Building codes (i.e., Uniform Building Code) must be improved.
- Nonstructural hazards must be reduced.
- The risk from existing buildings must be reduced.

In addition, there are several issues regarding seismic, geological, and geotechnical evaluation and design that were also identified by the technical community (i.e., consulting engineers, universities, and governmental agencies). Vertical accelerations were measured more accurately for this earthquake than previous earthquakes, and they were higher values than had been anticipated. During an earthquake, ground motion moving in waves through an alluvial basin has a tendency to result in damage that is focused in specific areas. This

type of effect, which resulted in more damage than expected, was observed at the boundaries of the San Fernando Valley. Current or newer structures generally performed well, whereas older structures performed poorly. The codes will require revision similar to the way codes were revised following the 1933 Long Beach earthquake and the 1971 San Fernando earthquake.

Although the efforts to reassess the structural standards for buildings is ongoing, these lessons learned are not directly applicable to the Project because the landfill is designed in accordance with landfill regulatory standards that differ from the UBC. In general, the design parameters used to evaluate shaking are more stringent for landfills designed to Subtitle D standards (e.g., 2,375-year return period) than for buildings (e.g., 475-year return period) or for landfills designed only to the state's Maximum Probable Event (MPE) standards (e.g., 100-year return period) and other structures. Because there are many other additional aspects of these design parameters that are not comparable, it is difficult to make a direct comparison of the seismic standards for landfills with those for buildings.

The risks associated with buildings are also vastly different than those for landfills. The ultimate risk in a building is loss of life. The major risk or impact from damage to a landfill liner is release of contaminants into the materials underlying the landfill.

4.9.3.6 Proposed Action

Impacts. This impact assessment comprises: (1) a performance comparison between Eagle Mountain Landfill and other California landfills that experienced earthquakes (Appendix H-2) and (2) an assessment of site-specific (landfill and Townsite) seismic hazards, which consist of strong ground shaking, fault rupture, seismic slope instability, liquefaction, seismically induced settlement, tsunamis, and seiches. The Project site was extensively evaluated to determine the activity of faults at the site. The active faults in the vicinity were analyzed to determine the appropriate design seismic event. Based on these evaluations, there are no Holocene faults located within 200 feet of the site. The proposed landfill components of the Project, especially the liner system, were evaluated with respect to seismic design. The most stringent seismic design criteria were used in the evaluation. The studies concluded that the Project is designed to the most stringent standards for seismic design and, therefore, provides a high degree of seismic resistance and protection of the environment. In particular, the liner is designed to prevent a release even when subjected to a level of seismic shaking that statistically occurs only once every 2,375 years at this site.

Landfill Comparison. This evaluation identified the active and potentially active faults closest to the Project site. A detailed evaluation of the seismicity of the site resulting from earthquakes on those faults was performed. The result of these studies concludes that the proposed Project will not be damaged using the most conservative estimates of seismic shaking for the site.

On the basis of evaluation of existing landfills following the Whittier, Loma Prieta, and Northridge earthquakes, the nearby landfills generally sustained moderate to little or no

damage due to earthquake shaking; and there was no known impact to groundwater or surface water due to these seismic events. For several reasons, it is concluded in this EIS/EIR that the Project will perform better than those landfills. First, the proposed Eagle Mountain Landfill is designed using a more stringent standard than the existing landfills were designed; and, second, this design will be implemented in a less seismically active area than the locale of the Whittier, Loma Prieta, and Northridge earthquakes.

The generally good performance of the landfills subjected to strong ground shaking described above, and in more detail in Appendix H-2 of this EIS/EIR, provides an opportunity to compare the proposed Eagle Mountain Landfill with the other landfills and draw some conclusions about anticipated seismic performance. Compared to the 21 landfills examined in the assessment report (Appendix H-2), the Eagle Mountain Landfill has several important differences. First, the site is on the eastern edge of the area of historically high seismicity in Southern California (see Figure 3.9-6). This means that, compared to the Los Angeles Basin where existing landfills observed following the Northridge earthquake are located, the Project site is less seismically active. This is based on the extensive evaluation of seismicity in the vicinity of the Project site that provides a model for predicting the maximum seismic acceleration expected within the seismic framework of the area. Second, the landfill is designed using more stringent prescriptive design criteria (Section 4.9.3.2 and Appendix H-1) than were used at other landfills even though there were no known impacts at the existing landfills. Because the Eagle Mountain Landfill is in a less seismically active area and is designed to more stringent standards than most of the existing landfills subject to strong ground shaking in the Whittier Narrows, Loma Prieta, and Northridge earthquakes, the performance of the Eagle Mountain Landfill during an earthquake is expected to be better than the observed performance of any of the landfills evaluated after those earthquakes.

Based on the referenced documents and materials reviewed, seismicity is not considered a significant impact. This conclusion is derived from the current evidence of the performance of landfills during recent earthquakes and the opinions of experts rendered in documents prepared for the Project site investigation and design.

The assessment report (Appendix H-1) makes the following conclusions about results of the seismicity analysis comparing the Eagle Mountain Landfill to landfills evaluated following the Loma Prieta and Northridge earthquakes:

- Landfills subject to shaking from the Loma Prieta and Northridge earthquakes did not sustain any known damage resulting in a release of leachate and/or landfill gas.

- The Eagle Mountain Landfill will be designed to a more stringent standard than landfills affected by the Loma Prieta and Northridge earthquakes.

- The Eagle Mountain Landfill site is located in a less seismically active area than the landfills impacted by the Loma Prieta and Northridge earthquakes.

On the basis of the comparison of landfill design and the geological setting of the 21 landfills with the design and geological setting of Eagle Mountain Landfill, it is expected that the potential seismic impacts at the Project site have been mitigated by the location of the Project and the seismic design of the facility.

Site-specific Seismic Hazards. Six site-specific seismic hazards are discussed below:

Ground Shaking. The landfill site will likely be subjected to seismic ground shaking during the life of the Project, as predicted by the models developed for evaluating seismicity of the site. Since 1932, which is the approximate date for reliable historical data, the site has experienced several seismic events between M = 4.0 and M = 5.9 located within about 13 miles of the site (GeoSyntec, 1996). The site has also been subjected to one event with a magnitude greater than 6.0 located about 50 miles from the site. Analysis of the magnitude and distance of each event from the site indicates that the strongest ground motions the Project could have experienced in that time period resulted in peak ground accelerations likely in the range of 0.15 to 0.27 g (acceleration due to gravity). These are, in general, less than ground accelerations measured or estimated at landfill sites affected by the Northridge earthquake (see Table 4.9-1). The higher accelerations from the Northridge earthquake resulted in little or no damage to landfills. The Eagle Mountain Landfill liner system is designed to withstand a peak horizontal ground acceleration of 0.56 g that is much higher than both historical accelerations at the site and the estimated acceleration experienced by existing landfills during the Northridge earthquake.

Fault Rupture. Fault rupture is not considered to be a significant impact because there is strong evidence that Holocene displacement has not occurred on any of the known faults within 200 feet of the site (Appendices H-1, H-3, H-4, and H-5).

Liquefaction. Liquefaction occurs when saturated near-surface deposits of cohesionless soils (i.e., sands and gravels) suffer a significant loss of shear strength and behave like a viscous fluid when subjected to strong ground shaking. Liquefaction can result in loss of support for foundations and slope stability. Liquefaction is not expected to occur at the Project site because the cohesionless soils are dry because of the deep water table. Also, the cohesionless soil at the site is generally dense to very dense, making it less susceptible to liquefaction.

Seismic Slope Instability. Seismic slope instability occurs when natural and man-made slopes deform when subjected to strong ground shaking. Analysis has shown that the potential for seismic slope instability of the natural and man-made slopes at the site is low (GeoSyntec, 1996; Appendix H). Surficial instability, such as rock falls and soil slumping, could occur. However, the impacts from these occurrences are not considered significant because the size of these types of failures are typically very limited; and they have not caused significant damage at other landfills subject to surficial slope failures.

The California Department of Water Resources (DWR), Division of Dam Safety, extensively reviewed the stability analysis performed and described by GeoSyntec in the ROWD

(GeoSyntec, 1992 and Appendix H-1). Based on the DWR review, the RWQCB incorporated several conditions in the WDR issued for the project in May 1994. These conditions were included to address all the issues identified by DWR and result in a high degree of confidence that the landfill slopes will be designed and constructed to perform as described.

The impact to the Townsite is not considered significant because no slopes are located near the structures associated with the Townsite.

Seismically Induced Settlement. Seismically induced settlement occurs when cohesionless soils are shaken into a denser configuration resulting in volume reduction that causes settlement. Materials that could be susceptible to seismically induced settlement at the Project site consist of cohesionless fill, alluvium, and waste. All cohesionless fill placed at the site during construction of the facility will be compacted to at least 90 percent of the materials maximum dry density as described in the ROWD (GeoSyntec, 1992). Cohesionless fill compacted to this degree is not susceptible to seismically induced settlement. Alluvial deposits on the site are generally dense to very dense and are reported to be in excess of 40,000 years old (GeoSyntec, 1992 and Appendix H-5). Cohesionless materials that are dense to very dense are not susceptible to seismically induced settlement. In addition, studies have shown that alluvium more than about 20,000 years old is extremely resistant to liquefaction and seismically induced settlement (GeoSyntec, 1992). Fill placed during previous mining operations and younger, loose alluvial deposits could be susceptible to seismically induced settlement.

Tsunamis and Seiches. Tsunamis and seiches are large seismically induced waves that occur on very large bodies of water (i.e., oceans) and large land-locked bodies of water (i.e., lakes), respectively. Neither tsunamis nor seiches is expected to occur because of the desert setting of the site and its great distance from any large bodies of water.

Mitigation. All of the impacts associated with seismic hazards will be mitigated through design and construction of the facility. The following paragraphs describe the specific mitigation measures.

Impacts associated with strong ground shaking will be mitigated by designing all containment facilities to withstand a magnitude 6.5 event located 5 miles from the site generating an acceleration of 0.56 g at the site. This event, as required by Subtitle D, is expected to occur at this site once every 2,375 years. This design is significantly more conservative than the California seismic design standards for a Class III landfill (i.e., the maximum probable event [MPE]). The MPE is expected to occur once every 100 years. The maximum ground shaking at the site expected over a given 2,375-year period is significantly higher than that expected over a given 100-year period. The liner system is also designed to withstand as 8.0 magnitude earthquake on the San Andreas fault at its closest location to the site.

The potential for seismic slope instability will be mitigated through various design and construction measures. All natural and man-made slopes have been analyzed for seismic

stability using the Subtitle D design event and conservative interface shear strength values (GeoSyntec, 1996, Appendix AA). Acceptable factors of safety against failure were achieved. To ensure that the engineered slopes constructed during facility development achieve the desired factors of safety, minimum interface shear strength values will be specified in the construction documents.

The potential for seismically induced settlement of fill placed during previous mining activities and of younger, loose alluvium will be mitigated through design and construction of the facilities. Any previous fill or loose alluvium that would provide support for any facilities will be removed and replaced with compacted fill prior to the construction of the facilities.

Significance After Mitigation. All impacts of identified seismic hazards on the proposed Project are either not significant (e.g., in the case of fault rupture and liquefaction) or will be mitigated to reduce impacts to below levels of significance. The construction standards for Townsite buildings will be in accordance with applicable codes as required by the Riverside County Building and Safety Department (i.e., UBC or UHC).

4.9.3.7 No Action Alternative

Impacts. The No Action Alternative would result in no change to existing conditions. This alternative would prolong the reliance on existing landfills that are not designed to the more stringent landfill standards used for the proposed Project. The likelihood of a significant impact occurring at other existing landfills due to a seismic event is therefore increased for the No Action Alternative.

Mitigation. No mitigation measures are required for this alternative. The reclamation of the mine would proceed in accordance with the existing reclamation plan.

Significance After Mitigation. The impacts associated with the potential seismic hazards would be below the level of significance.

4.9.3.8 Reduced Volume of Onsite Disposal Alternative

Impacts. The potential impacts under this alternative would be essentially identical to those of the proposed Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Impacts of this alternative are not considered significant. The mitigation measures listed for the proposed Project would reduce potential impacts to below the level of significance.

4.9.3.9 Alternate Road Access Alternative

Impacts. The potential impacts under this alternative essentially would be identical to those of the proposed Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Impacts of this alternative are not considered significant. The mitigation measures listed for the proposed Project would reduce potential impacts to below the level of significance.

4.9.3.10 Rail Access Only Alternative

Impacts. The potential impacts under this alternative essentially would be identical to those of the proposed Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Impacts of this alternative are not considered significant. The mitigation measures listed for the proposed Project would reduce potential impacts to below the level of significance.

4.9.3.11 Landfill on Kaiser Land Only Alternative

Impacts. The potential impacts under this alternative essentially would be identical to those of the proposed Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Impacts of this alternative are considered not to be significant. The mitigation measures listed for the proposed Project would reduce potential impacts to below the level of significance.

4.9.3.12 Landfill Development/No Townsite Development Alternative

Impacts. The potential impacts under this alternative essentially would be identical to those of the proposed Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Impacts of this alternative are not considered significant. The mitigation measures listed for the proposed Project would reduce potential impacts to below the level of significance.

4.9.4 Mineral Resources

4.9.4.1 Proposed Action

As discussed in Section 3.9.3, an area approximately 2.1 square miles in the northern Eagle Mountains at the Project site is classified as MRZ-2a and there are approximately 170 million short tons of economically recoverable iron ore at the Eagle Mountain mine within the MRZ-2a area. The proposed Project would preclude recovery of 5.3 million tons of that iron ore due to covering by landfilling. The remaining iron would be accessible and could be recovered with the appropriate mining techniques. The total amount of ore remaining at the site amounts to less than 1 percent of the United States reserves of iron. According to the United States Bureau of Mines (1991), 1990 world iron resources are estimated to exceed 800 billion metric tons of crude ore containing more than 230 billion metric tons of iron units. The largest concentrations of the world's iron ore reserves are in the Soviet Union, Australia, Canada, United States, Brazil, and China (U.S. Bureau of Mines, 1991). United States iron resources are estimated to be about 110 billion metric tons of ore containing approximately 27 billion metric tons of iron (U.S. Bureau of Mines, 1991). Of these resources, only 16.1 billion metric tons of reserves (containing 3.8 billion metric tons of iron) are considered to be economically recoverable (U.S. Bureau of Mines, 1991).

Impacts. The landfill operations at the Eagle Mountain Mine would result in the following losses in terms of economically recoverable U.S. iron reserves if the specified reserves are not mined prior to commencement of landfilling operations:

- East Pit–Midsection Resources: Loss of 4.8 million tons or 0.03 percent of economically recoverable U.S. iron reserves.

- East Pit–Alluvial and Central Pit Resources: Loss of 41.4 million tons or 0.26 percent of economically recoverable U.S. iron reserves.

- East Pit–West Extension: Loss of most reasonable and economic access to 6.8 million tons or 0.04 percent of U.S. iron reserves.

Approximately 72.7 million short tons (or 42.6 percent) of iron reserves in the Black Eagle North and South resource areas would be unaffected by the development of the landfill. No precious metals were detected in the proposed landfill site area. The proposed Project does not include any active mineral exploration or mining activities at Eagle Mountain.

Mitigation. The impacts of landfilling on mineral resources could be satisfactorily mitigated by domestic and global reserves. In addition, the plan for filling the landfill includes starting at the west portion of the landfill footprint so that the East Pit is the last portion filled. This would allow mining of the largest onsite reserve, the East Pit alluvial ore, to remain an option throughout much of the proposed operational life of the landfill.

Significance After Mitigation. The impacts to mineral resources would be below the level of significance. The abundance of iron ore in the United States and the world serves as the mitigation for the Project regarding mineral resources production.

4.9.4.2 No Action Alternative

Impacts. The No Action Alternative would result in no changes to existing conditions. The potential recovery of iron from the Project area would remain the same as the current conditions allow.

Mitigation. No mitigation measures are required for this alternative. The reclamation of the mine would proceed in accordance with previous plans.

Significance After Mitigation. The impacts to the mineral resources would be below the level of significance.

4.9.4.3 Reduced Volume of Onsite Disposal Alternative

Impacts. The potential impacts under this alternative essentially would be identical to those of the proposed Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Impacts of this alternative are not considered significant. The mitigation measures listed for the proposed Project would reduce potential impacts to below the level of significance.

4.9.4.4 Alternate Road Access Alternative

Impacts. The potential impacts under this alternative essentially would be identical to those of the proposed Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Impacts of this alternative are not considered significant. The mitigation measures listed for the proposed Project would reduce potential impacts to below the level of significance.

4.9.4.5 Rail Access Only Alternative

Impacts. The potential impacts under this alternative essentially would be identical to those of the proposed Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Impacts of this alternative are not considered significant. The mitigation measures listed for the proposed Project would reduce potential impacts to below the level of significance.

4.9.4.6 Landfill on Kaiser Land Only Alternative

Impacts. The potential impacts under this alternative essentially would be the same to those of the proposed Project. This alternative would result in filling the East Pit area first, thus limiting access to the 21.1 million short tons of iron ore in that area. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Impacts of this alternative are not considered significant. The mitigation measures listed for the proposed Project would reduce potential impacts to below the level of significance.

4.9.4.7 Landfill Development/No Townsite Development Alternative

Impacts. The potential impacts under this alternative essentially would be identical to those of the proposed Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. Impacts of this alternative are not considered significant. The mitigation measures listed for the proposed Project would reduce potential impacts to below the level of significance.

4.10 Visual and Recreation

This section presents the standards of significance and results of the impacts analysis of visual resources [which are discussed in Section 4.10.2 and include windblown dust and debris (Section 4.10.3) and nighttime lighting (Section 4.10.4)]. Recreational resources are discussed in Section 4.10.5. A detailed discussion of visual resources is in Appendix I, *Visual Analysis*.

4.10.1 Standards of Significance

4.10.1.1 Visual Resources

Pursuant to Appendix G of the CEQA Guidelines, a project will normally have a significant effect on the environment if it will have "a substantial demonstrable negative aesthetic effect, ... conflict with established recreational ... uses of the area, ... or ... breach published national, state, or local standards relating to ... litter control." Appendix I of the CEQA Guidelines includes as examples of "negative aesthetic effect" the obstruction of a scenic vista or public view or impairment of an existing view by introducing an aesthetically offensive visual feature. Appendix I of the CEQA Guidelines also indicates that new sources of light and glare could have a significant effect on the environment.

Consistent with these criteria, standards of significance based on the BLM's Visual Resource Management System have been developed to evaluate impacts to visual resources attributable to the proposed Project.

- A significant negative visual impact would result if there is an increase in visual contrast attributable to the Project in comparison to the existing condition, and if the contrast rating exceeds the acceptable contrast rating for the visual resource classification (VRC) of that area. (A visual contrast rating was completed for the existing and proposed conditions in the vicinity of the Project. A comprehensive description of BLM's visual analysis methodology is contained in Appendix I of this EIS/EIR.)

4.10.1.2 Windblown Debris, Visibility, and Dust

The Project would have a significant effect on the environment if it results in any increase in the amount of windblown debris attributable to Project-related activities, in violation of regulatory requirements governing litter control. For example, the Project could have a significant effect on the environment if it does not conform with the operating criteria for landfills, as presented in 40 CFR Part 258, Subpart C and Title 14, CCR, Article 7.6:

- Cover Material Requirements. The landfill must be covered with 6 inches (150 mm) of earthen material or approved alternate materials at the end of each operating day, or at more frequent intervals if necessary, to control disease vectors, fires, odors, blowing litter, and scavenging [40 CFR §258.21 (a)(b)].

- Litter Control. Litter and loose material shall be routinely collected and disposed of properly. The collection frequency shall be set with the objective of preventing the accumulation of quantities which are aesthetically objectionable or cause other problems. The Enforcement Agency shall periodically monitor the effectiveness of the litter control program [Title 14, CCR, Article 7.6, §17711].

4.10.1.3 Nighttime Lighting

- Night lighting and illumination of the sky attributable to the proposed Project within the Project site would be considered a significant impact if it introduces a new, visible light source to an area that creates a substantial increase over existing light levels as viewed from sensitive receptors (e.g., campers in JTNP).
- Glare from reflective surfaces will be considered a significant impact if it creates a hazard to motorists or creates a frequently noticeable distraction that degrades the recreational experience of JTNP.

4.10.1.4 Recreational Resources

Project-related air quality, visual resources, noise, and odor impacts resulting in a potential for degradation of recreational values, are discussed in Sections 4.4 (Air Quality), 4.10.2 (Visual Resources), and 4.13 (Noise), respectively. This subsection discusses the potential for the proposed Project to result in a net loss of existing recreational opportunities or a displacement of recreational uses. Consistent with the CEQA criteria cited in these sections, the following standards of significance have been developed for recreation.

- Implementation of the proposed Project would be considered to have a significant impact on recreation in the Project area if it resulted in a net loss of existing recreational opportunities, a displacement of recreational uses, or a degradation of recreational value. The definition of what constitutes a "degradation of recreational values" assumes a measurable change in the physical environment that could negatively affect a recreational user's sense of sight, sound, or smell (e.g., increased levels of noise or pollutant emissions). Thresholds of significance for evaluating these changes are judged upon the potential for the Project to cause any of the following physical effects at adjacent recreational areas:
  - Introduction of a substantially visible light source to an area occupied by potentially sensitive receptors (e.g., campers in JTNP) (see Section 4.10.4, Nighttime Lighting)
  - Visual contrast with the surrounding landscape from views within established recreational areas that exceeds the contrast rating acceptable for the visual resource management classification in that area (see Section 4.10.2, Visual Resources)

- Reduction in visibility from recreational areas attributable to landfill emissions below significance thresholds calculated in the EPA-approved VISCREEN model (see Section 4.4, Air Quality)
- Increase in the amount of windblown debris and/or dust in the recreational area that are aesthetically objectionable or cause other problems (see Section 4.10.3, Windblown Debris, Visibility, and Dust)
- Project-related noise impacts are considered significant if they result in an average hourly increase of more than 3 dBA above existing conditions in the wilderness area of JTNP. This criterion was selected because 3 dBA is the level below which increases in noise levels are not perceptible to humans (see Section 4.13, Noise)
- Increase in emission of any odorous substance that causes the ambient air at any recreational area to be odorous and to remain odorous subsequent to its dilution with four parts of odor-free air or to exceed any applicable odor threshold for a specific compound (see Section 4.4, Air Quality)

4.10.2 Visual Resources

4.10.2.1 Methodology

BLM Visual Contrast Rating System. The impact evaluation method uses the methodology in BLM Manual *H-8431-1 - Visual Resource Contrast Rating* (BLM, 1986b). This methodology was chosen to be consistent with the previous EIS/EIR and because the NPS does not have a recognized visual assessment methodology. The BLM approach to impact assessment typically compares the degree of contrast between the existing landscape of a project site, and the site with a proposed project. The existing site for the proposed Eagle Mountain Project has already been extensively disturbed as a result of the active mining operations conducted at the Eagle Mountain Mine from 1948 to 1982. Because the East Pit area of the proposed Project site is so disturbed, the BLM's approach has been modified so that the contrast ratings were determined in two parts. The first is a contrast rating between the existing disturbed area of the mine and the surrounding natural landscape, and the second is a contrast rating between the mine used as a landfill (both during active operations and after closure) and the surrounding natural landscape. The two contrast ratings are then compared to determine whether the proposed Project significantly changes the degree of contrast of the site with the natural landscape, compared to the contrast level with the existing conditions of the proposed Project site.

Key Observation Points. The contrast is evaluated from each of the eight key observation points (KOP) summarized in Table 4.10-1. These KOPs are shown in Figures 3.10-1 and 3.10-2. The KOPs were selected to represent the most sensitive views of the site (see Section 3.10) and the views from the most sensitive viewer groups within the Project site viewshed. KOPs No. 1 through 4 depict existing and Project-simulated conditions from within or near the JTNP boundary. The JTNP staff was consulted to determine their selection (see Section 3.10). As discussed in Section 3.10-1, the proposed Project is visible from only

4 of the approximately 20 viewing locations within JTNP that were initially selected for potential analysis. Three of these four are within areas recently designated by the passage of the Desert Protection Act in October 1994, as lands to be administered by JTNP. KOP NO. 1 is from within the Coxcomb Mountains wilderness area. KOP No. 2 is from just outside JTNP but is representative of wilderness and nonwilderness views from the northern Eagle Mountains within JTNP. KOP No. 3 is from the Pinto Wells area, which is a nonwilderness area and is approximately 1/2 mile closer to the proposed Project site than the wilderness areas farther north in the Pinto Basin. KOP No. 4 is from a wilderness area. The other 20 locales in JTNP were removed from consideration in this analysis after an initial screening revealed that the Project site could not be seen from these locales. KOP No. 5 illustrates a representative view of the Project from within the Townsite. KOPs No. 6 through 8 show other important views of the site in the vicinity of the Project (e.g., from nearby communities, major roads).

Table 4.10-1
Key Observation Points, Distance Zones, and Description of Views

KOP	Viewing Distance	Description of View Direction to Project Site
Views from JTNP*		
1	8.5 miles (bg)	Looking west from Coxcomb Mountain Trailhead
2	2 miles (fg/mg)	Looking north from Eagle Mountains near JTNP boundary
3	5 miles (mg/bg)	Looking southwest from road to Pinto Wells at JTNP Boundary
4	11 miles (bg)	Looking southwest from Coxcomb Mountains
Views from Townsite		
5	1.5 miles (fg/mg)	Looking north from Townsite
Other Views		
6	11 miles (bg)	Looking northwest from Interstate 10 at Desert Center
7	11 miles (bg)	Looking northwest from State Highway 177 at Lake Tamarisk
8	11 miles (bg)	Looking northwest from State Highway 177 in Chuckwalla Valley

Notes: fg/mg = foreground/middleground (3 to 5 miles)
bg = background (5 to 15 miles)
JTNP = Joshua Tree National Park

*Within and in the area of JTNP, photographs were taken from 35 vantage points to assess suitability for use as key observation points. Of these 35 vantage points, the proposed Project (at full build out) would be partially or fully visible from 4 points.

Photographs of existing conditions from the eight KOPs, along with computer-generated simulations of the Project, were used to assist in assigning contrast ratings. The contrast

evaluation process uses a weighted quantitative scoring of the four basic visual elements: color, form, line, and texture for each of the major landscape features (e.g., land, vegetation, and structures). The weighted order of the four elements, from most to least significant, was determined to be color, form, line, and texture. Color was weighted highest since there is a low diversity of color because rock and soil dominates the landscape. Color contrast is, therefore, the most noticeable element.

After the total visual contrast scores were tabulated for each KOP, these scores were compared to the VRCs identified for the Project site to determine if the Project exceeds the allowable contrast. A comprehensive description of BLM's visual analysis methodology is contained in Appendix I of this EIS/EIR.

4.10.2.2 Proposed Action

The proposed Project comprises two major components: (1) a Class III nonhazardous municipal solid waste landfill (i.e., Eagle Mountain Landfill) and (2) renovation and potential repopulation of the adjacent Townsite. Other parts of the Project include the BLM and Kaiser land exchange and the FLPMA roads and railroad right-of-way grants. The visual attributes and impacts associated with these Project components are described below.

Landfill.

Impacts. Impacts are discussed for operations and for final closure. The proposed landfill would be constructed over an approximate 100-year build-out period in five contiguous phases from west to east. The landfill footprint (i.e., the area where disposal of waste occurs) would cover approximately 2,164 acres. Buffer (i.e., open space) and ancillary facilities (e.g., truck scales, administration buildings) would occupy an additional 2,490 acres. Final landfill cover elevations would range from approximately 2,120 feet above mean sea level (msl) during Phase 3, to about 2,750 feet above msl during Phases 1 and 2. During the initial phases of landfill construction and operation, landfilling activities would occur at lower elevations in the western portion of the landfill site. Several features incorporated into the landfill design to reduce the visual contrast of the Project with the surrounding natural landscape include:

- **Location.** The Project site is located in an area already extensively disturbed by more than 40 years of mining operations, and located in the background zone of the majority of sensitive viewers within the Project area.
- **Design.** Compared to existing topography at the Project site, the general shape and mass of the landfill would be graded to be similar to the adjacent mountain landforms. In addition, final cover materials would consist of a 1-foot-thick soil layer covered by 2 feet of cobble- and boulder-sized material designed to blend into the existing desert landscape.
- **Minimizing Disturbance.** The majority of buffer and ancillary facilities (e.g., rail container yard, truck scales) would be located in areas previously disturbed by mining operations, thus minimizing grading of undisturbed and/or vegetated areas.

Operations. Initial landfill operations would be located in the western portion of the Project site and would be constructed in five contiguous phases progressing generally from west to east. Each landfill phase would be separated into subphases; each subphase would comprise from 10 to 30 acres, and generally be developed from lower to higher elevations. The active working face, or area that is receiving waste for landfilling would be limited to fewer than 2 acres. During landfill operations, refuse is compacted and periodically covered with soil to contain and limit the amount of exposed refuse at any given time. Hostling vehicles would transport containers on chasis to working face of the landfill and where the containers and chasis are backed onto a tipper platform before disconnecting and pulling forward. The door(s) are opened on the container and the front of the tipper lifts allowing refusing to slide from the container to the working face. Waste would then be spread and compacted. Daily cover is applied a couple of times a day and always at the end of the work day.

The Project site is most visible from the east and southeast because it is screened by the Eagle Mountains on the south, west, and north. The landfill would be constructed from west to east and, therefore, would not be as visible during the early stages as it would in later stages of operation. During the later stages, landfill operations would occur at higher elevations in the eastern portion of the Project site and would be more visible within the Project area viewshed. During upslope excavation activities, newly exposed soil would be visible during landfill development. It is expected that this amount of exposed soil would be minimal because of the staged development of the landfill in phases and subphases. The color of this exposed soil, as well as of the refuse, would create a visual contrast with the muted colors (i.e., shades of gray, mauve, brown, and tan) of the surrounding mountains. In addition, the smooth, horizontal form and line of the landfill during Project operations would not be consistent with the more natural, irregular form and line of the surrounding mountain landscape. Other visual aspects of landfilling operations are the trucks and landfilling equipment that would be operating and moving along the landfill slopes and working face.

From most KOPs within the Project area viewshed, landfill operations would be located within the background distance zone (i.e., 5 to 15 miles, see Table 3.10-2). From these distances, the small area of working face, the interim cover, and moving vehicles would not attract attention and would, therefore, not result in a significant visual impact.

For nearby recreationists in the adjacent portions of the Eagle Mountains that are part of JTNP (i.e., KOP No. 2) and residents living at the Townsite (i.e., KOP No. 5), the Townsite and the operational aspects of the landfill site would be visible in the foreground/middleground distance zone (i.e., 3 to 5 miles or less). Depending on the elevation and angle of view, the Project site can be highly visible or completely unseen from the northern portion of the Eagle Mountains. Most people use lower elevation canyons and washes for recreation and do not see the proposed Project site. Hikers following the ridgelines, however, have excellent views of the surrounding landscape, including the mine area and other human development within the vicinity (e.g., the MWD facilities, the Townsite, Desert Center, Lake Tamarisk, and Interstate 10).

The visual contrast level of the operating landfill is compared against the contrast level of the existing landscape, which is an extensively disturbed mine pit. The disturbed areas of greatest contrast with the natural landscape consist of very light colored open pits with regular horizontal terraces extending along the slopes. Much of the greatest disturbance is not visible from the Townsite but is visible to superior views down into the mine from the northern Eagle Mountains. The contrast of the existing mine pit with the surrounding natural landscape would be moderately high to high, as seen from the Townsite and the northern Eagle Mountains.

Photographs of existing conditions and simulations of the landfill during operation from these two KOPs (i.e., KOP 2 and KOP 5) are presented in Figures 4.10-1 and 4.10-2. The contrast evaluation of existing conditions and the Project simulations from these KOPs is described in more detail below, and the contrast rating scoring summarized in Table 4.10-2 is contained in Appendix I of this EIS/EIR.

- KOP No. 2

KOP No. 2 illustrates views looking north from a jeep trail within the nonwilderness area of the newly designated JTNP boundary but is also representative of views from wilderness in the northern Eagle Mountains. The trail leads to the foothills of the Eagle Mountains. The existing condition and final closure simulation are shown in Figure 4.10-1. Under existing conditions, the graded, unvegetated slope, horizontal lines, and light color of the tailing pile of the mine are a predominant visual element set against a backdrop of the more rugged, darker-toned Eagle Mountains. The portion of the Project site located within the Eagle Mountain landscape unit and designated with moderate scenic quality is visible from this vantage, as well as from other points within the Eagle Mountains. The visual contrast between the distinct and dominant landforms at the mine site with the adjacent, undisturbed areas is high.

The Project simulation shows the landfill operation between Phases 3 and 4 of landfill development. Phases 1 and 2 would not be visible from this location but would be visible from further southwest within the Eagle Mountains. Although not visible because of the distance, trucks, landfilling equipment, and a light-colored active area are included in the simulation. During operation, the active landfill area would have a more horizontal and regular line and form than the completed areas. As it nears completion, the proposed landfill would introduce a more dominant landform into the foreground of this view that, like the existing tailings pile, is simple in form and texture, with regular, horizontal lines. The unnatural-looking tailings and overburden piles would decrease in size, becoming less dominant, but would retain their unnatural form, lines, and color. At this stage of completion, the landfill does not block views of the Eagle Mountains to the north. The visual contrast of the landfill in operation is moderate to high from this KOP at this stage of development, which is a lower contrast than the existing condition.

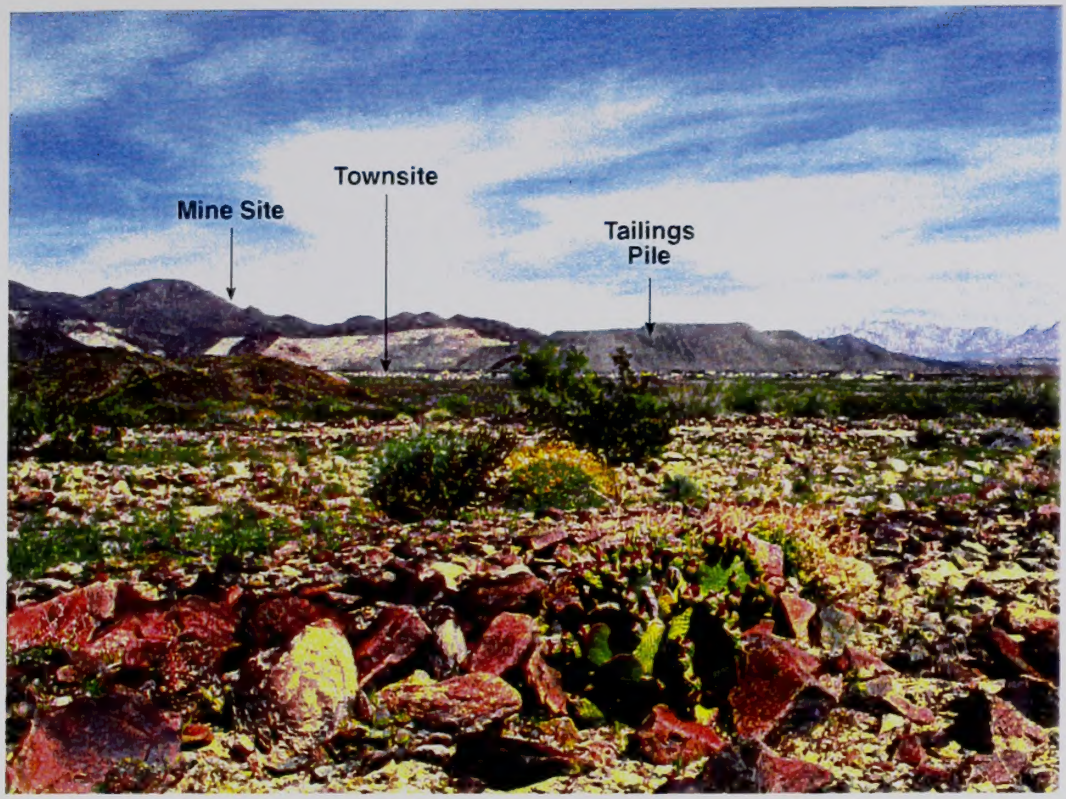
- KOP No. 5

KOP No. 5 illustrates views of the Project site from the Eagle Mountain Townsite looking northwest. This view is depicted in Figure 4.10-2. Because of the proximity of the Townsite to the mine, the entire disturbed area is not shown. For example, the tailing piles to the right of this view are not included. The existing mine is the dominant visual feature in the immediate foreground of this view. The light tones along the lower slopes of the graded mined areas sharply contrast with the more medium tan, brown, and mauve-colored hues of the higher elevations of the site and the distant Eagle Mountains. The disturbed, unvegetated slopes and horizontal, repetitive lines of mined terraces are also visually noticeable compared to the more natural and undisturbed adjacent landforms. The general diagonal line and undulating form of the middle slopes, however, are similar to the surrounding mountain landform. The existing visual contrast level of this site is high.

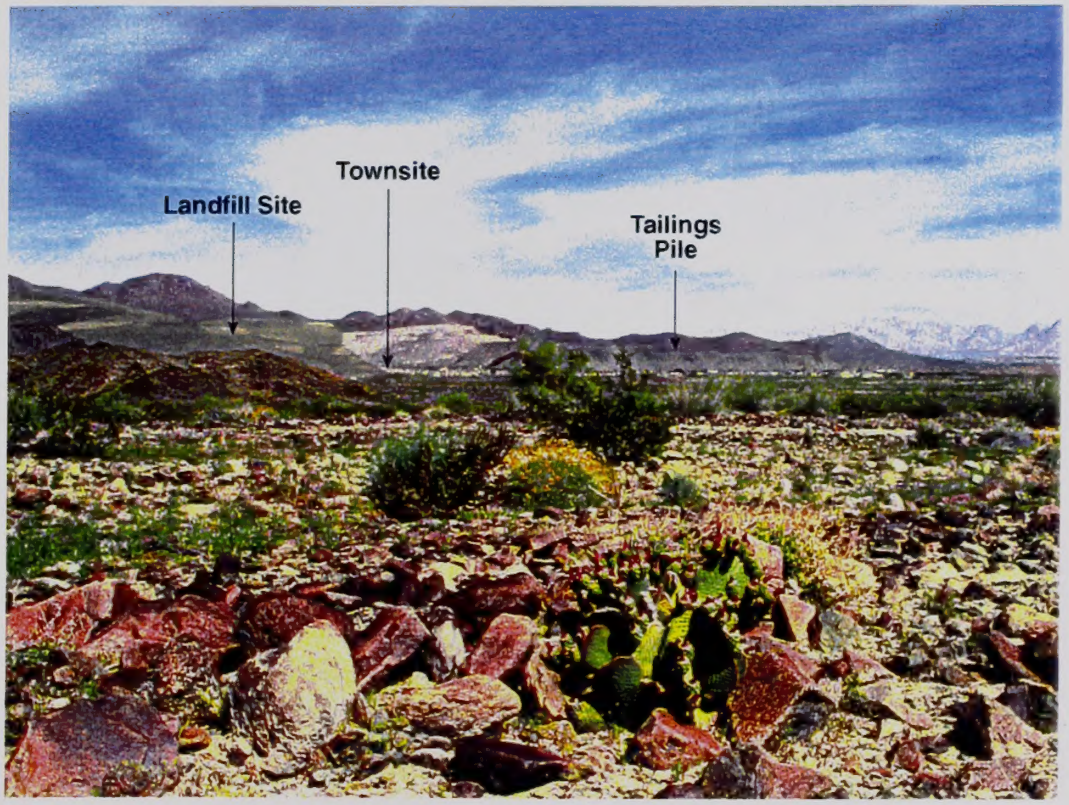
The simulation shows the landfill near the completion of Phase 2 of landfill development. Here again, trucks, equipment, and a light-colored active area are difficult to see from the distance of the viewer (i.e., greater than 1 mile). To residents, workers, and visitors at the Townsite, the operating landfill would begin to be a dominant landform in the foreground of this view as it reaches the middle stages of development. Although the landfill form, line, and texture are much less complex than the natural surroundings, the scale of the landfill at this stage is small enough that it would not attract attention. The color contrast varies, but matches the background mountains and is low overall. The visual contrast would also be high.

Summary of KOPs for Operations. The closest views would be within 1 mile for Townsite residents and at a location in JTNP (nonwilderness area) approximately 1.5 miles from the Project site. The key view analysis shows that from these distances, and at elevations equal to or lower than the working face, the working face and landfill vehicles would not be noticeable to the casual observer. The Townsite is lower in elevation than the landfill and would have minimal views of the working face throughout the operation of the landfill. The working face would be visible and noticeable to view points within the JTNP that have clear views of the landfill site and area at an elevation above the working face. This active area would be visible to a broader area when it is on the upper slopes of the landfill. The key views cannot depict motion, but the movement of landfill vehicles could draw the attention of recreational users in JTNP wilderness areas or viewers in the Townsite.

The analysis indicates that during the early stages of operation, the landfill would slightly improve the visual quality of the site, except to viewers at higher elevations in the Eagle Mountains within the border of JTNP. This is a result of the fact that, although the form and line of the operating landfill contrasts with the natural landscape, the landfill would cover areas previously disturbed by mining that have an equal or greater contrast, without becoming a dominant landform or blocking views to the mountains beyond. The diminished size of the tailings and overburden piles and the lack of views of the working face also contribute to the improved contrast. The impacts of the landfill form during the later stages of operation would be similar to the impacts of final closure discussed below.



Existing Condition



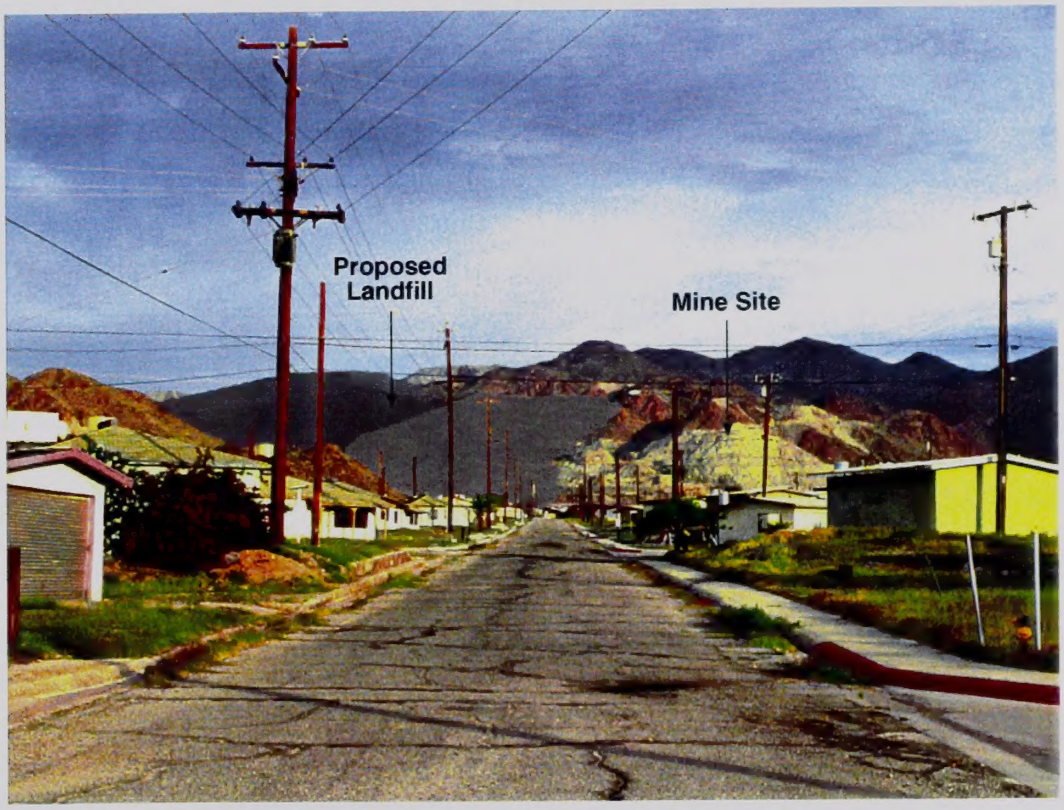
Project Simulation - During Operation

Figure 4.10-1
KOP No. 2
Eagle Mountain Landfill and
Recycling Center EIS/EIR

m115231.T6.14 KOP No.2 6/96



Existing Condition



Project Simulation - During Operation

Figure 4.10-2
KOP No. 5
Eagle Mountain Landfill and
Recycling Center EIS/EIR

m115231.T6.14 KOP No.5 6/96

Final Closure. Because of its scale and potential visibility, the impacts of the landfill after closure are illustrated for analysis purposes from all eight KOPs.

- KOP No. 1

KOP No. 1 depicts views from the Coxcomb Mountains wilderness within JTNP looking west. This view is depicted in Figure 4.10-3. In the photograph of the existing condition, this vantage offers unobstructed views of the Chuckwalla Valley and surrounding Eagle Mountains. The disturbed landscape of the Eagle Mountain Mine, which is approximately 8.5 miles from this KOP is also visible against the backdrop of this mountain range. The slopes, tailing, and overburden piles of the mine are distinguishable from their surroundings by their regular and simple form, horizontal line, lighter color, and uniform texture that lacks the complexity of the surrounding mountains. The mined area is not vegetated, which contributes slightly to the textural contrast between the proposed Project site and adjacent surroundings. Viewed from KOP No. 1, the visual contrast level of the existing site landform is moderate, tending toward high.

To recreational users in the Coxcomb Mountains, the proposed Project would result in an overall improvement in visual contrast. The landfill would be more similar to the adjacent mountains in form, mass, and line compared to the existing tailings and overburden piles; but it is larger in scale. The uniform smooth texture and general lack of complexity of the proposed landfill is similar to that of the tailings pile, but the larger scale makes it more noticeable. The final cover materials, which would be more visually compatible in terms of color with the surrounding landscape, would potentially compensate for this. The overall visual contrast rating for the proposed Project is moderate.

- KOP No. 2

KOP No. 2 illustrates views looking north from a jeep trail within the nonwilderness area of the newly designated JTNP boundary (Figure 4.10-4). This KOP is also representative of wilderness area views from the Eagle Mountains. As described above under operation impacts, the disturbed mine site, which is about 2 miles from this KOP, is the predominant visual element set against a backdrop of the Eagle Mountains. The portion of the Project site located within the Eagle Mountain landscape unit and designated with moderate scenic quality is visible from this vantage, as well as from other points within the Eagle Mountains. The visual contrast between the distinct and dominant landforms at the mine site with the adjacent, undisturbed areas is high.

From KOP No. 2, and to recreational visitors to this portion of the JTNP, the proposed Project would have a similar visual contrast with the surrounding landscape as the existing site. The proposed landfill would introduce a more dominant landform into the foreground of this view that, like the existing tailings pile, is simple in form and texture, with regular, horizontal lines. From the vantage point at KOP No. 2, the landfill would block views of the Eagle Mountains to the north. Compared to existing conditions, however, the landfill would be more visually compatible in terms of color with the surrounding landscape. The visual contrast rating for the landform of the proposed Project is also high.

- KOP No. 3

KOP No. 3 depicts views of the disturbed mine areas and the landfill site from the area north of the MWD access road for the Colorado River Aqueduct. This road, which is located in the area where the Chuckwalla Basin and the Pinto Basin converge, is just within the JTNP boundary (nonwilderness area) looking southwest. These views are shown in Figure 4.10-5. From this vantage, the existing mine site is barely visible in the middleground (i.e., approximately 5 miles in the distance). The most prominent visual element at the Project site is the light color and horizontal line and form of the tailing pile that contrasts with the darker hues and undulating forms of the surrounding adjacent mountains. The general forms and lines of the landscape features of the site, however, are visually subordinate to the larger and more dominant Eagle Mountains. Because color is weighted as the most significant visual element in the Project area, the existing landforms of the site have a moderate visual contrast rating.

To viewers in this portion of the Pinto Basin, the proposed Project would not substantially change the visual contrast level of the site. The landfill would replace the existing, smaller-scale mining piles with a larger, more dominant form, having less texture and complexity, in the middleground/background of this view. The color of the proposed landfill cover, however, would be more compatible with the surrounding landscape than the tailing piles. Therefore, the visual contrast of the Project rating is also moderate; and the landfill would not cause a significant change in visual contrast as seen from this location.

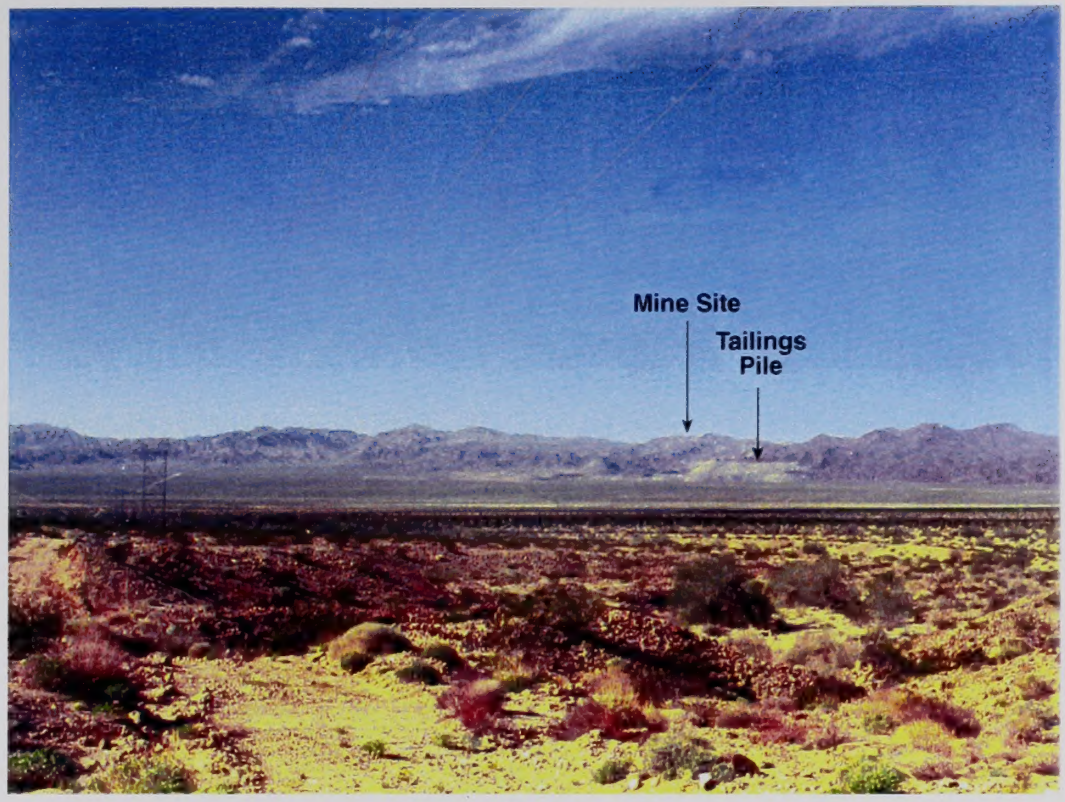
- KOP No. 4

KOP No. 4 depicts views looking southwest from the Coxcomb Mountains within a nonwilderness area of JTNP approximately 11 miles from the Project site. This view is depicted in Figure 4.10-6. Under existing conditions, the immediate foreground view is dominated by the jagged and rocky terrain of the Coxcomb Mountains. The broad, flat Pinto Basin extends from the foreground/middleground into the background of this view. The rounded, steep Eagle Mountains block background views of the mine site from this vantage; therefore, the existing visual contrast level of this site is low.

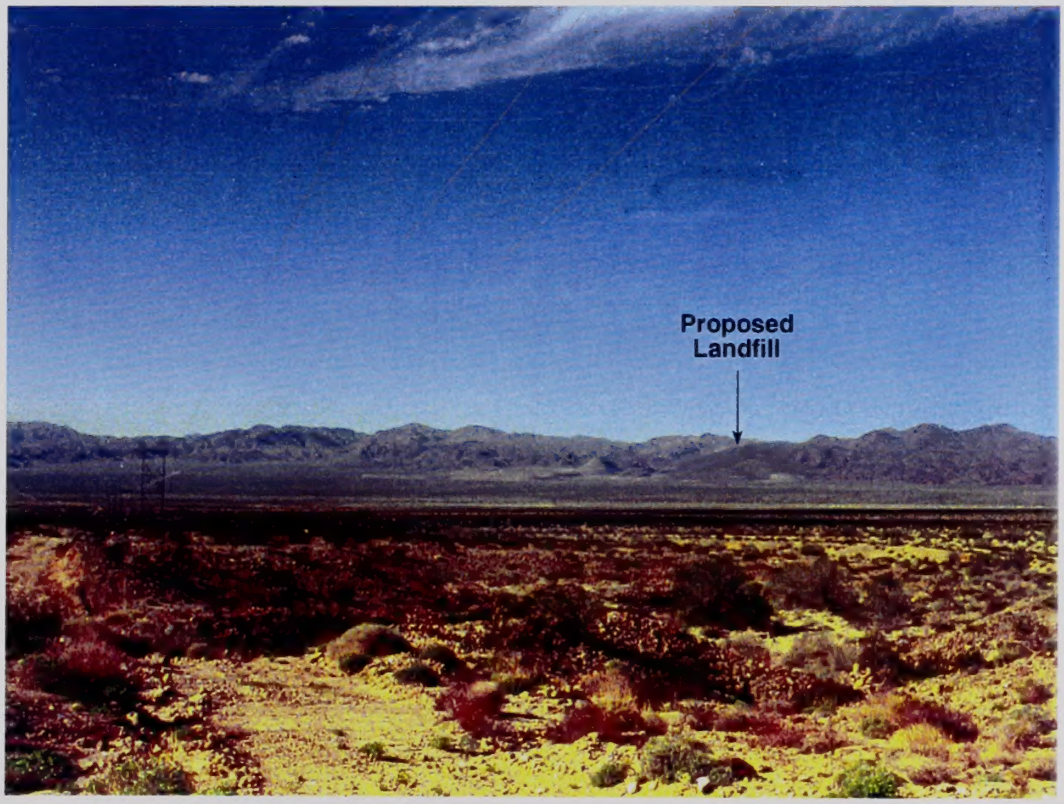
For viewers from this portion of the Coxcomb Mountains, the proposed Project would not change the visual contrast level of the site. From this distance, the overall form, color, and texture of the landfill would not be perceptible within the context of this mountain landscape. Therefore, the visual contrast level for the proposed Project would also be low.

- KOP No. 5

KOP No. 5 illustrates views of the Project site from the Eagle Mountain Townsite looking northwest. This view is depicted in Figure 4.10-7. As described under the operation impacts, the existing mine site cannot be entirely seen within this view, and the existing mine, which is about 1.5 miles from this KOP, is the dominant visual feature in the immediate foreground. The color of the disturbed areas presents the greatest contrast with the natural landscape, whereas the line, form, and texture contrast to a lesser degree. The general diagonal line and



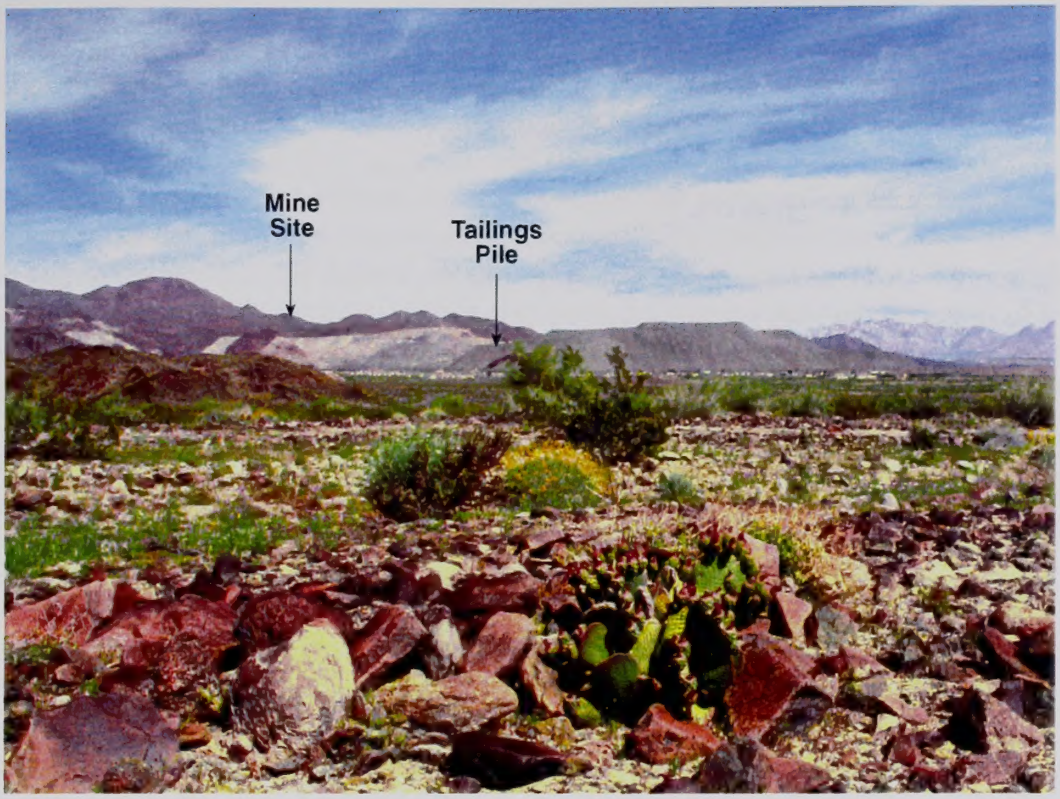
Existing Condition



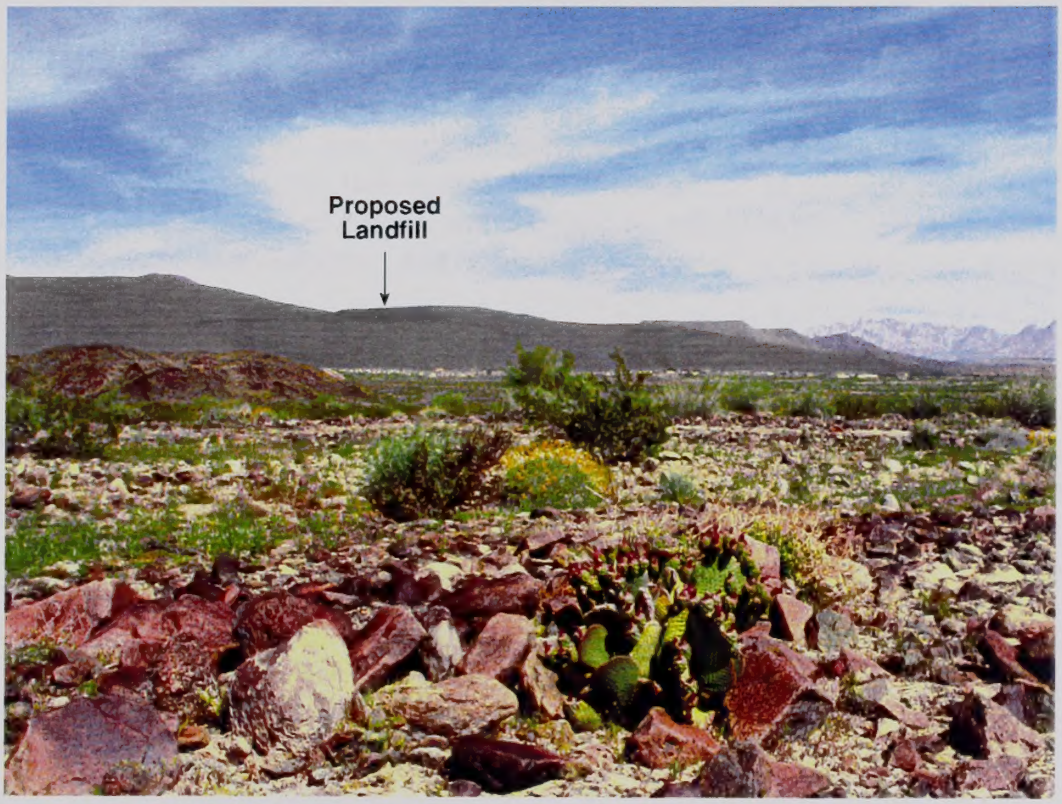
Project Simulation - Closure

Figure 4.10-3
KOP No. 1
Eagle Mountain Landfill and
Recycling Center EIS/EIR

m115231.T6.14 KOP No.1 6/96



Existing Condition



Project Simulation - Closure

Figure 4.10-4
KOP No. 2
Eagle Mountain Landfill and
Recycling Center EIS/EIR

m115231.T6.14 KOP No.2a 6/96

undulating form of the middle slopes, however, are similar to the surrounding mountain landform. The existing visual contrast level of this site is high.

To residents, workers, and visitors at the Townsite, the proposed landfill would introduce a dominant landform into the foreground of this view. The landfill form, line, and texture are much less complex than the natural surroundings and therefore stand out. The silhouette line is largely horizontal. The landfill would also partially block views of the lower elevations of the adjacent Eagle Mountains to the north. The color contrast, however, is low. The visual contrast would also be high, but only slightly higher than the existing condition.

- KOP No. 6

KOP No. 6 depicts views from Interstate 10 at Desert Center looking northwest toward the Project site. The existing condition and final closure simulation are shown in Figure 4.10-8. This landscape is characterized by flat, open terrain of the Chuckwalla Valley in the foreground/middleground, changing to the more irregular topography of the Eagle Mountains in the distant background. The existing mined areas are barely noticeable in the background of this view; the light-toned color and horizontal line and form of the tailing pile are the most dominant visual elements at the site. The visual contrast level for existing site conditions is moderate.

To residents living at Desert Center and motorists traveling along this portion of Interstate 10, the impact of the proposed Project would not result in a substantial change in visual contrast at the site. The upper elevation of the landfill area would be visible as a more regular ridgeline against the Eagle Mountains in the background. Compared to existing onsite features (i.e., tailing pile), the color of the proposed landfill would, however, be more visually compatible with the surrounding Eagle Mountains. In general, from this KOP, the overall form, line, color, and texture of the landfill would be visually subordinate to the surrounding landscape features. The visual contrast level of the proposed Project is also moderate.

- KOP No. 7

KOP No. 7 depicts views of the Project site looking northwest from State Highway 177. The community of Lake Tamarisk is in the middleground of the view. The existing condition and final closure simulation are shown in Figure 4.10-9. Under existing conditions, this view is characterized by the broad, open, undeveloped Chuckwalla Valley in the foreground/ middleground and the Eagle Mountains that rise predominately in the background. The existing mined areas are slightly visible behind a low, existing ridge in the background of this view. From this vantage, the light color and horizontal line and form of the tailing pile are the most dominant visual elements at the site. The visual contrast level for existing site conditions is moderate.

For residents living at Lake Tamarisk and motorists traveling in the vicinity along Highway 177, the effect of the proposed Project would not substantially change the visual contrast level at the mine site. The landfill would introduce a larger, more predominant

landform behind an existing ridge in the background of this view. The landfill form would, however, be similar in shape and scale to the adjacent mountains and would be visually harmonious in terms of color and texture. The visual contrast level of the proposed Project is also moderate.

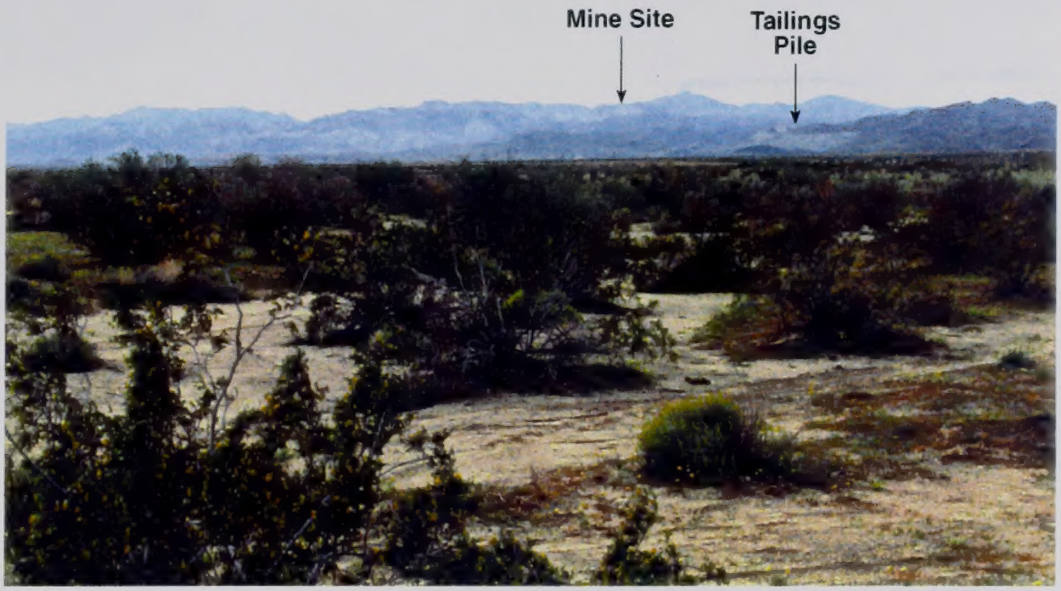
- KOP No. 8

KOP No. 8 illustrates views of the Project site looking northwest from an MWD access road for the Colorado River Aqueduct that intersects with Highway 177. The existing condition and final closure simulation are shown in Figure 4.10-10. Under existing conditions, this view is characterized by the open, desert landscape of the Chuckwalla Valley in the foreground, framed by the Eagle Mountains in the background. The existing mined areas are visible in the distance at the base of the Eagle Mountains. The most predominant visual elements at the mine site are the lighter tones and horizontal line and form of the tailing pile, which contrasts with the darker hues and more undulating form of the adjacent mountains. The visual contrast level for the existing site conditions is moderate.

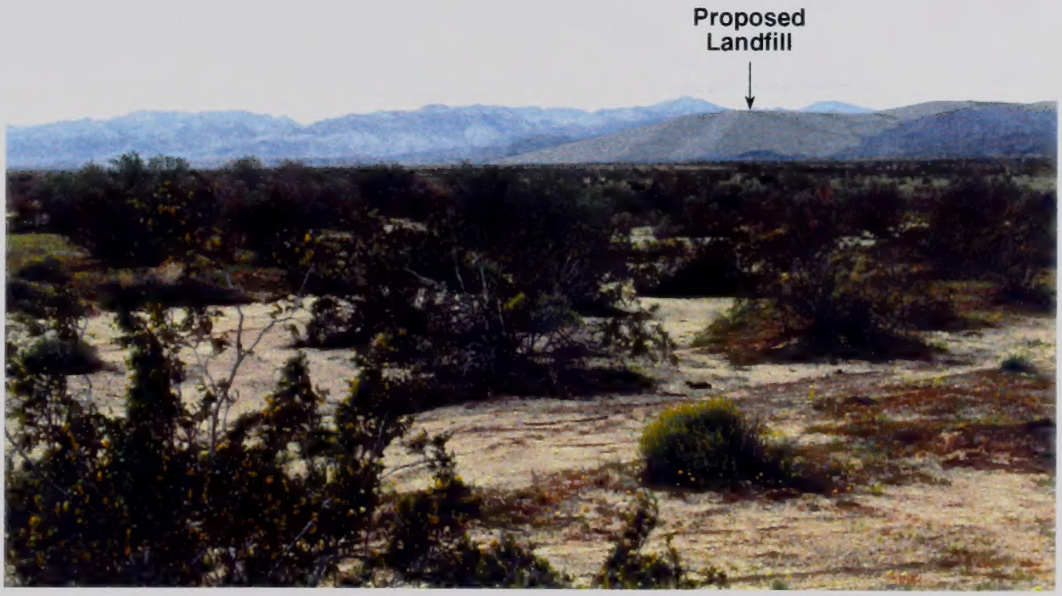
For motorists traveling in the vicinity along Highway 177, implementation of the proposed Project would not substantially change the visual contrast level at the mine site. Similar to what is described for KOP No. 7, the landfill would introduce a larger, dominant landform into the background of this view; however, this feature would be compatible with the adjacent landscape in terms of its general mass, form, and color. Based on land features, the visual contrast level of the proposed Project is moderate to low.

Summary of KOPs for Final Closure. The comparison of visual contrast ratings for existing conditions and the proposed Project is summarized in Table 4.10-2. The KOP analysis indicates that from all sensitive viewing locations, the proposed Project will have the same or a lower visual contrast with the surrounding natural environment as the existing condition during operation and after final closure. Because the Project site is in the background of views from KOPs 1, 3, 4, 6, 7, and 8, the visual contrast level for these locations is moderate to moderately low with or without the Project and the Project would not result in a significant impact. This visual contrast level is well within the VRC IV classification for the majority of the Project site. Views of the VRC II (i.e., the undisturbed Eagle Mountains) area of the site would also not result in a significant impact.

When viewed from the KOPs 2 and 5, however, the proposed landfill Project would contrast with the natural surroundings during the later stages of operation and after final closure. This is because the form, line, and texture of the landfill is much less complex than the natural landscape; and it is a dominating scale when viewed from within the foreground and close middleground. The degree of contrast would vary during operation depending on the viewer location and stage of landfill operation. Visual contrast will be highest to viewers who clearly see the landfill working face (generally those who could hike up into the Eagle Mountains and view the proposed Project site at higher elevations). These areas are designated as nonwilderness. The landfill working face will also have a high color contrast and include moving landfilling vehicles. Viewers in the Townsite and lower elevations in the north Eagle Mountains will not clearly see the early stages of operation or the working face.



Existing Condition



Project Simulation - Closure

Figure 4.10-5
KOP No. 3
Eagle Mountain Landfill and Recycling Center EIS/EIR

m115231.T6.14 KOP No.3 6/96



Existing Condition



Project Simulation - Closure

Figure 4.10-6
KOP No. 4
Eagle Mountain Landfill and
Recycling Center EIS/EIR

m115231.T6.14 KOP No.4 6/96



Existing Condition



Project Simulation - Closure

Figure 4.10-7
KOP No. 5
Eagle Mountain Landfill and
Recycling Center EIS/EIR

m115231.T6.14 KOP No.5a 6/96



Existing Condition



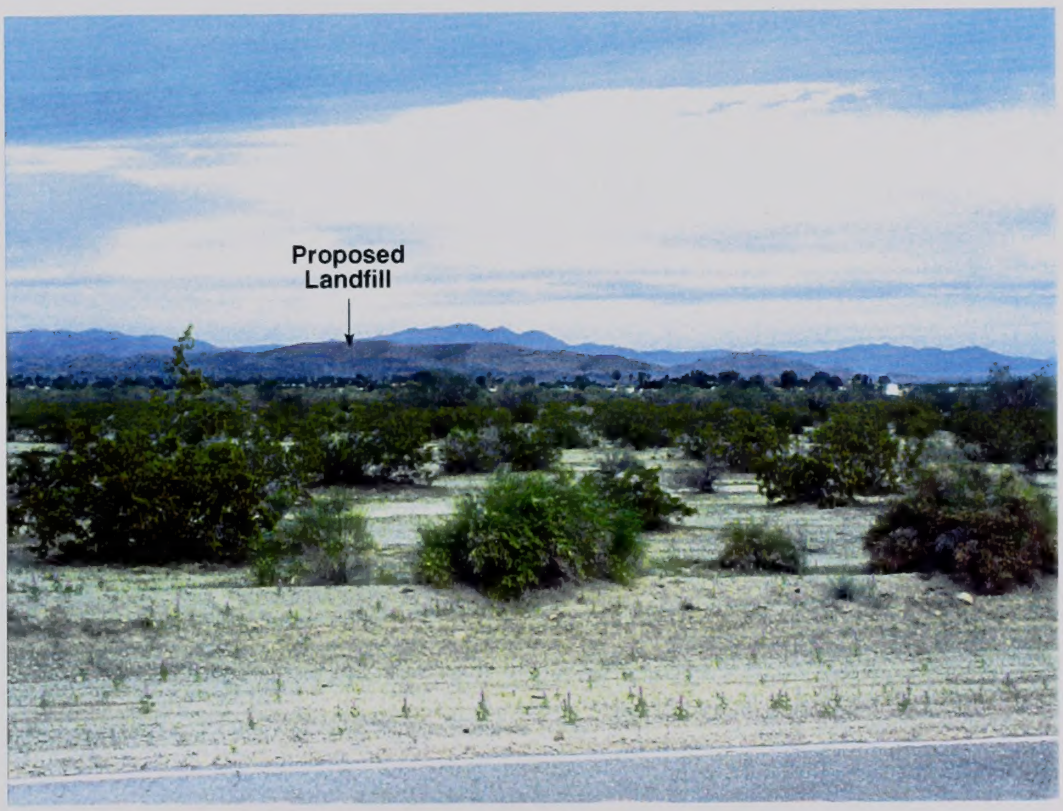
Project Simulation - Closure

Figure 4.10-8
KOP No. 6
Eagle Mountain Landfill and
Recycling Center EIS/EIR

m115231.T6.14 KOP No.6 6/96



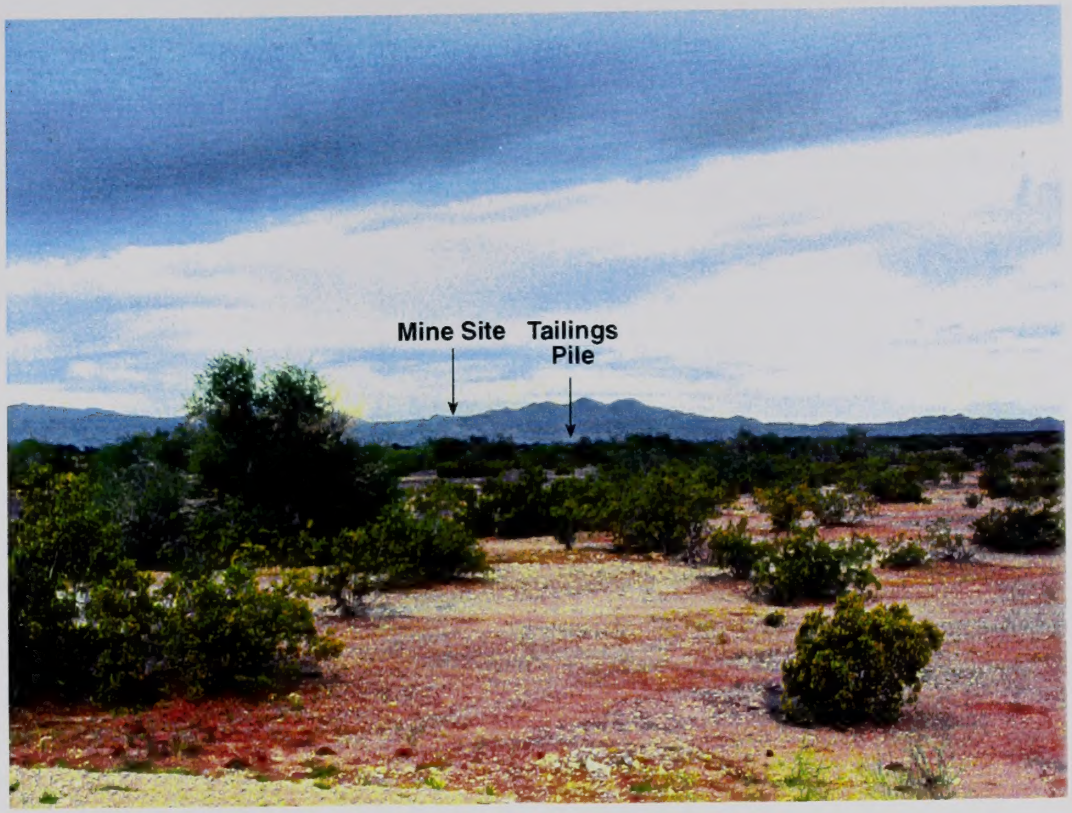
Existing Condition



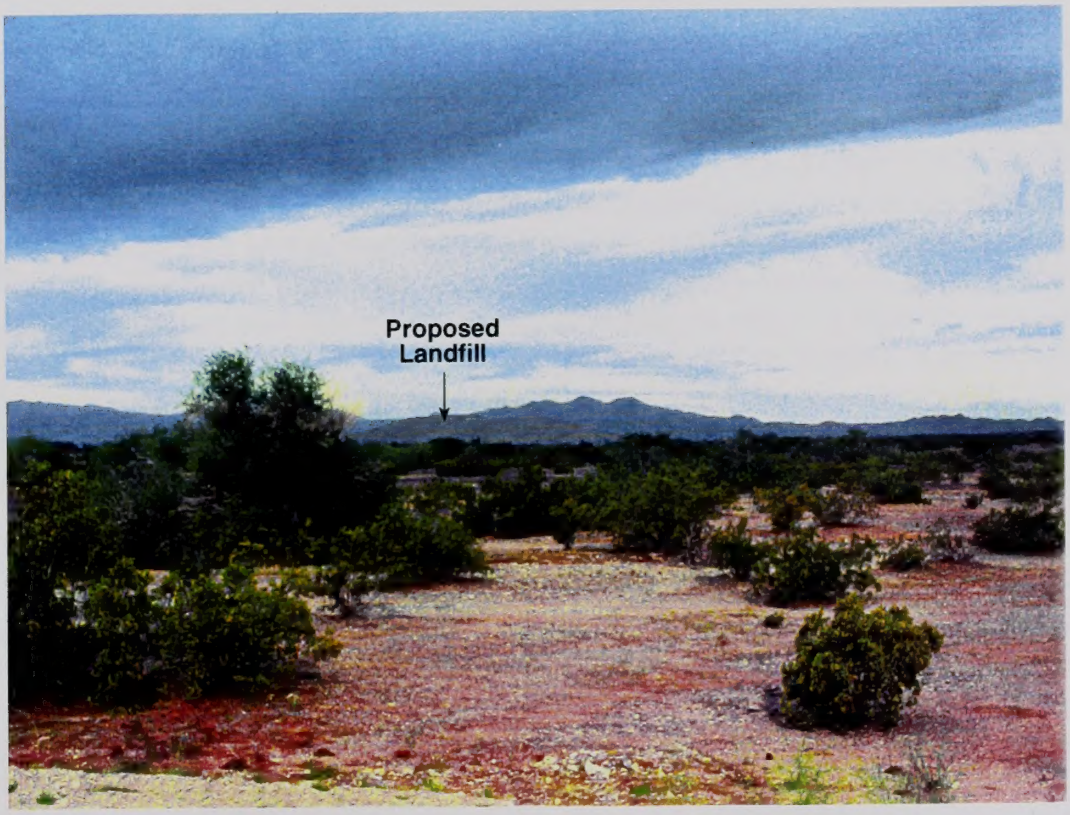
Project Simulation - Closure

Figure 4.10-9
KOP No. 7
Eagle Mountain Landfill and Recycling Center EIS/EIR

m115231.T6.14 KOP No.7 6/96



Existing Condition



Project Simulation - Closure

Figure 4.10-10
KOP No. 8
Eagle Mountain Landfill and Recycling Center EIS/EIR

m115231.T6.14 KOP No.8 6/96

Table 4.10-2
Key Observation Points: Visual Contrast Ratings Comparison of Existing Conditions with Proposed Project (Landfill Operations* and Final Closure)**

KOP	Viewing Distance	Visual Contrast Levels		
		Existing Conditions	Operations	Closure
Views from JTNP				
1	8.5 miles (bg)	Moderate	NA	Moderate
2	2 miles (fg/mg)	High	Moderate to High	High
3	5 miles (mg/bg)	Moderate	NA	Moderate
4	11 miles (bg)	Low	NA	Low
Views from Townsite				
5	1.5 miles (fg/mg)	High	High	High
Other Views				
6	11 miles (bg)	Moderate	NA	Moderate
7	11 miles (bg)	Moderate	NA	Moderate
8	11 miles (bg)	Moderate	NA	Moderate

*KOPs 2 and 5 were selected for analysis during operating conditions because of the potential for the most sensitive viewer populations (recreationists within JTNP and residents of the Townsite) to view these areas.
**KOPs 1 through 8 were selected for analysis under final closure conditions because of the scale and potential visibility of the final cover.
NA = Not applicable. These KOPs were not selected for analysis during operations.
fg/mg = foreground/middleground (3 to 5 miles).
bg = background (5 to 15 miles).
JTNP = Joshua Tree National Park.

The existing mine site also contrasts strongly with the natural landscape when viewed from the Townsite and mountains. The existing areas of greatest contrast are more visible from the same locations where the proposed landfill will also have the most contrast during operation (from higher elevations in the north Eagle Mountains of the JTNP). When viewed from KOPs No. 2 and No. 5, the existing site contrasts to a lesser degree than the proposed landfill in terms of form, line, and texture, but more strongly in terms of color. Although the existing tailings and overburden piles have a form, line, and texture similar to the proposed landfill, they are not as large and, therefore, are less dominant in terms of these three elements. In addition, because of its height, the proposed landfill would be slightly more visible than the existing mine, and will block views of parts of the Eagle Mountains behind the site when viewed from the Townsite and lower elevations within the north Eagle Mountains of JTNP. This is partly offset by the fact that the mountains in this area have a moderate visual quality and that the landfill will not be visible from much of the lower elevation area within JTNP.

The north Eagle Mountains of the JTNP were rated as a highly sensitive viewing location because part of the area is designated as a national park and part is designated as wilderness, even though the relative use is low (i.e., no designated camping sites or hiking trails and no sources of drinking water). The opportunity for seeing the Project site is considered moderate to low. Wilderness area users are visually sensitive because they have high expectations not to see evidence of human development or human activity. The locations where the proposed Project would be visible from within the wilderness areas are generally higher elevations where both the existing mine site and other existing human development in the Chuckwalla Basin or Eagle Mountains (i.e., towns, roads, powerlines, aqueducts) is also visible.

Although the existing visual character of the mine site changes with implementation of the proposed Project, the visual contrast of the proposed action with the natural environment remains similar to the existing condition and, therefore, would not result in a significant impact. The contrast ratings in the high category are acceptable within a VRC IV area (see Appendix I). The area north of the landfill footprint (i.e., the area north of the mine site and south of the Pinto Basin) with a VRC of II (see Figure 3.10-3) will not be directly modified by the Project, although it and other natural background mountains will be screened from some lower elevation view points by the landfill at its final height.

There will be a slight increase in the viewshed of the landfill within the northern reaches of the Eagle Mountains within JTNP compared to the viewshed of the existing mine because of the greater height of the landfill. Although this area of the Eagle Mountains is not expected to incur high visitor use (i.e., no visitor facilities, vehicle access, or designated trails in this part of the park), the visual impact of the proposed landfill would be significant on the VRC II part of the Project site and natural background of the Eagle Mountains because it replaces high sensitivity views of these VRC II areas with a high contrast feature. The high-contrast rated Project feature is not compatible with a VRC II area.

Mitigation. The following mitigation measures would reduce impacts for KOPs 2 and 5. For landfill operations, the active face of the landfill operation would be approximately 2 acres. This active area would be minimized to the greatest possible extent to reduce the visual impact of landfill operations. For final closure, this analysis has assumed that final cover materials, derived from moderate to dark gray overburden piles, will closely resemble the color of the surrounding natural landscape. If local materials used as final cover strongly contrast with the natural landscape, then another cover material or some type of surface color treatment would be used to blend with the tones and hues of the adjacent mountain landscape. The visual contrast of the final landfill's form and line can be reduced by making the final contours more irregular and less even. The flat side slopes could be graded to include some undulation or shallow valleys to mimic natural ravines, and the top silhouette could be made more irregular to simulate surrounding peaks. Implementation of these form and line mitigations would change the contrast rating of the proposed Project to moderate, which is compatible with the screened VRC II areas.

Significance After Mitigation. With implementation of the proposed mitigation measures (i.e., limiting the active face of the landfill, color blending of cover materials, contouring of the landfill's form and line, and grading of side slopes), the impact to visual resources including JTNP would be reduced to a level that is below significance.

Townsite

Impacts. As described in Section 3.10, the Eagle Mountain Townsite consists of a network of low-scale (i.e., one-story), residential and commercial development and supporting infrastructure, as well as a privately operated, community correctional facility. Visually, the Townsite appears neglected and abandoned; a large portion of the residential area has been fenced, and building demolition debris lays in scattered piles throughout the Townsite. Because of the size and scale differences between existing buildings at the Townsite and the

adjacent areas extensively disturbed by previous mining activities, the renovation of structures proposed at the Townsite would not be noticeable from KOPs within the Project area and, therefore, photo-simulations were not prepared.

The proposed Townsite Specific Plan and General Plan Amendments will address renovation of the Townsite associated with landfill construction and operations. By including Townsite renovation, the implementation of the proposed Project would result in an improvement in visual quality. Specific planned improvements include development of landscaped parkways, community park and recreation facilities, internal open space, and infill housing on currently vacated building pads and foundations (see Section 4.5, Land Use). Therefore, the proposed Project would provide an aesthetic benefit to the Project vicinity.

Mitigation. No adverse impacts have been identified and no mitigation measures are necessary.

Significance After Mitigation. Implementation of the Townsite Specific Plan and General Plan Amendments would improve visual quality in the vicinity of the Project. Implementation of the proposed mitigation would provide additional aesthetic benefits for the Townsite.

BLM and Kaiser Land Exchange

Impacts. In the proposed land exchange, BLM would transfer disturbed lands of low scenic quality and high visual contrast in the Eagle Mountains to Kaiser for non-disturbed desert areas of low visual contrast and low-to-moderate visual quality. This action would have a beneficial effect on visual resources in the vicinity of the Project because it would preserve areas with higher scenic value and benefit the BLM's scenic and biodiversity management goals and programs.

Mitigation. Because of the beneficial impacts of the land exchange, no mitigation is required or recommended.

Significance After Mitigation. No significant impacts are identified under the proposed Project.

FLPMA Roads and Railroads Right-of-Way Grants

Impacts. Construction of the Eagle Mountain Road extension and new rail spur would introduce new linear elements within the Chuckwalla Valley landscape. Construction and operation of additional haul facilities, however, would be extensions of currently existing facilities and, as such, would not introduce obvious changes in landscape character that would be significantly visible to sensitive receptors (e.g., residents, recreationists, travelers). Furthermore, because this landscape unit has low scenic quality attributable to existing development (including the existing Eagle Mountain Road and Eagle Mountain Railroad), the impact of these right-of-way grants on scenic quality in the vicinity of the Project would be less than significant.

Mitigation. None recommended.

Significance After Mitigation. No significant impacts are identified under the proposed Project.

4.10.2.3 No Action Alternative

Impacts. The No Action Alternative would result in no changes to existing levels of visual contrast at the Project site. The limited reclamation activities planned for the mine site (e.g., securing site access, signage) would not alter the disturbed existing condition of the mine. Onsite piles of overburden rock and mine tailings would remain. The visually blighted conditions at the Townsite would also continue.

Significance After Mitigation. Under the No Action Alternative, visual impacts would be considered significant and unavoidable.

4.10.2.4 Reduced Volume of Onsite Disposal Alternative

Impacts. The impact of this alternative on visual resources in the vicinity of the Project would be identical to the proposed Project because both would retain the same final cover elevations. Because the Reduced Onsite Disposal Alternative would extend the life of the landfill by approximately 20 years, however, the overall visual impact associated with Project operations would be greater compared to the proposed Project because the impact would be extended over a longer period of time.

Mitigation. Mitigation would be the same as for the proposed Project.

Significance After Mitigation. No new significant impacts are identified under this alternative.

4.10.2.5 Alternate Road Access Alternative

Impacts. Under the Alternate Access Road Alternative, transfer trucks would use the existing Kaiser Road to bring waste to the landfill. Because Kaiser Road, unlike the proposed Eagle Mountain Road, is an existing road with existing traffic, additional waste haul truck travel on Kaiser Road, consisting of approximately four to five trucks per hour, would pass through Desert Center and past Lake Tamarisk in closer proximity to residences. This would not significantly increase traffic flow on the road, although some residents could notice the increased frequency of trucks. From a visual perspective, this may cause a slight decrease in visual quality to some residents of the area. The potential impacts of the entire Project under this alternative, however, would be essentially the same as those of the proposed Project. This alternative would not alter the conclusions regarding visual impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation would be the same as for the proposed Project.

Significance After Mitigation. No new significant impacts are identified under this alternative.

4.10.2.6 Rail Access Only Alternative

Impacts. A reduction in truck traffic to the Project site would not substantially change the results of the visual contrast analysis performed for the proposed Project because the level of truck traffic in the context of existing traffic volumes has not been identified as a significant visual impact. This alternative would result in a slight reduction in daily waste delivered to the landfill (i.e., from 20,000 tpd to 18,000 tpd). This reduction, however, is not anticipated to alter substantially the conclusions about visual impacts and the mitigation measures associated with the proposed Project.

Mitigation. Mitigation would be the same as for the proposed Project.

Significance After Mitigation. No new significant impacts are identified under this alternative.

4.10.2.7 Landfill on Kaiser Land Only Alternative

Impacts. Construction of the landfill without the proposed land exchange between the BLM and Kaiser would limit landfill activities to approximately 399 acres, including the East Pit. The final cover elevation of the landfill under this alternative would be approximately 2,200 feet above msl. Because this alternative would result in an approximate 83- to 85-percent reduction in the amount of footprint area at the landfill site, the resulting impact on visual resources, particularly from nearby receptors, such as at the Townsite and from the adjacent Eagle Mountains, would be less than that described for the proposed Project.

Mitigation. Mitigation would be the same as for the proposed Project.

Significance After Mitigation. No new significant impacts are identified under this alternative.

4.10.2.8 Landfill Development/No Townsite Development Alternative

Impacts. Under this alternative, no improvements would be made to the Townsite. Because landfill employees would not reside at the Townsite, there would be fewer permanent residents affected by the Project's visual impacts. This alternative assumes that employees working at the landfill, the community correctional facility, and other facilities would commute from nearby communities such as Desert Center and Lake Tamarisk; from these locations, the landfill would be located in the middleground of residential views. The visual impact of the landfill from nearby residential communities would essentially be the same as described from KOPs No. 6 and 7 for the proposed Project (i.e., views from Desert Center and Lake Tamarisk, respectively). Under this alternative, the Project's visual impact on views from existing Townsite residents (i.e., KOP No. 5) would affect a smaller population. This alternative would not alter the remaining conclusions regarding impacts and mitigation

measures associated with the landfill, land exchange, and FLPMA grant portions of the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. No new significant impacts are identified under this alternative.

4.10.3 Windblown Debris, Visibility, and Dust

4.10.3.1 Proposed Action

Impacts. The proposed Project could be a source of litter and dust. Unpaved roadbeds and other exposed areas could also be a source of fugitive dust. Litter that is accidentally blown away from the Project site, particularly in JTNP, would degrade the overall scenic quality of the existing landscape. Generally, the Project would not create a noticeable change in regional visibility or haze, and the gas flares would not create a plume that is noticeable to the casual observer from locations at the closest boundaries of JTNP to the site. Dust and diesel exhaust from trucks and landfill equipment could create a haze above the landfill as seen from the closest boundaries of JTNP. The maximum regional haze impact attributable to the proposed Project is, however, well below the standard of significance established for air quality. A detailed discussion of the Project's visibility and regional haze impacts is presented in the Section 4.4, Air Quality.

As described in the Project Description, Section 2, litter would be controlled as part of the project design in four ways: (1) waste compaction and soil covering, (2) portable litter control fencing, (3) litter patrols, and (4) minimized active working face. These measures will be undertaken in compliance with all applicable state and federal regulatory requirements regarding litter control.

The Project will also include measures to mitigate potential fugitive dust emissions including: the application of nontoxic chemical dust suppressants to unpaved roads and parking areas, prewatering of soil prior to excavation, inactive exposed soil areas will be covered or sprayed with dust suppressants, and a visual monitoring station for potential impacts to JTNP (see Section 4.4). Implementation of these project design features will reduce the potential impact from dust to a less-than-significant level.

BLM/Kaiser Land Exchange and FLPMA Roads/Railroads Right-of-Way Grants. The proposed land exchange and new road/railroad right-of-way grants would have no impact on windblown debris. Construction of both the paved northern extension of Eagle Mountain Road and the new railroad spur would be conducted using standard dust control measures (e.g., spraying disturbed areas with water). All waste material would be transported to the landfill in covered containers to prevent windblown debris, and the trucks would travel on paved roads.

Mitigation. The proposed Project would include a number of measures to control windblown litter and dust to a level below significance. Although the Project design measures for controlling windblown debris exceed regulatory requirements, the following additional measures are proposed to address the NPS's "zero-tolerance" policy for windblown trash at JTNP.

- Prior to commencement of landfill operations, MRC will work with NPS to ascertain the feasibility of conducting modeling or a simulated debris release test to assess the potential occurrence of windblown trash being released and reaching JTNP. If the modeling or tests indicates such potential, MRC will work with NPS to identify additional control measures that might prevent such occurrences. If the modeling or testing procedure is deemed feasible, MRC shall conduct such modeling or testing prior to commencement of landfill operations.

- The perimeters of all landfill and wastehandling areas will be fenced and regularly patrolled for litter control.

- Incoming refuse (except for waste received at the local waste receiving facility) will be kept in closed containers until transported to the working face of the landfill. Upon deposit, the refuse will be compacted and covered on a daily basis with a minimum 6-inch layer of coarse tailings.

- A storm watch and early warning program will be implemented to alert landfill personnel to cover uncovered materials prior to a windstorm.

- A response plan to provide complete cleanup of accidental spills will be developed, including sufficient equipment and personnel to conduct a cleanup.

- Landfill personnel will be assigned for full-time litter and debris cleanup onsite as well as in the area between the landfill and JTNP during all daylight hours.

- Litter control personnel will be designated for direct contact and timely retrieval of stray litter when JTNP staff observe or receive reports of wind-borne debris.

- Litter control measures shall be jointly evaluated by MRC, BLM, and NPS after the first 6 months of landfill operation. If measures are not deemed adequate by the parties, they shall identify additional measures that might feasibly be taken.

- If it is determined at any time that windblown litter from the landfill is having an adverse affect on JTNP, NPS and BLM, the County (the Department of Environmental Health) will be consulted to assess appropriate remedial action.

Mitigation measures for visibility include both regulatory requirements and additional measures that include limits on operations of locomotive engines and landfill equipment, use of fuel that meets California's on-road regulations, purchase and operation of electric versions

of landfill equipment (when feasible), and additional study and evaluation of the technical feasibility of alternative fuels. These measures are discussed further in Section 4.4.

Significance After Mitigation. As discussed above, regional haze impacts attributable to the Project are well below the standard of significance established for air quality. Implementation of the mitigation measures will reduce windblown debris to below the level of significance. A small amount of windblown debris could be transported away from the Project site but it would be removed. After implementing mitigation measures, visibility impacts would be reduced to below the level of significance (see Section 4.4).

4.10.3.2 No Action Alternative

Impacts. The No Action Alternative would result in no Project related increase in windblown dust or debris in the Project area.

4.10.3.3 Reduced Volume of Onsite Disposal Alternative

Impacts. The effect of the reduced onsite disposal alternative on Project-related the potential impact of windblown debris and dust would be essentially identical to the proposed Project. Because the Reduced Onsite Disposal Alternative would extend the life of the landfill by approximately 20 years, the overall impact caused by windblown debris and dust associated with Project operations would be greater compared to the proposed Project because this impact would be extended over a longer period of time.

Implementation of the proposed Project design features described above (see Section 4.10.2.2) would reduce potential impacts associated with windblown debris to a less-than-significant level. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with windblown debris and dust for the proposed Project.

Mitigation. Mitigation would be the same as for the proposed Project.

Significance After Mitigation. No new significant impacts are identified under this alternative.

4.10.3.4 Alternate Road Access Alternative

Impacts. Under the Alternative Access Road Alternative, transfer trucks would use the existing Kaiser Road to bring waste to the landfill. Compared to the proposed Eagle Mountain Road route, truck travel on Kaiser Road would pass directly through Desert Center and past Lake Tamarisk, in closer proximity to residences. The potential impacts associated with windblown debris and dust under this alternative, however, would be essentially identical to those of the proposed Project because the transfer trucks would transport waste in enclosed containers to prevent windblown trash from leaving the containers. Furthermore, this proposed alternative access road is paved, and increased dust levels would not be anticipated. Therefore, this alternative would not alter the conclusions regarding windblown debris and dust impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation would be the same as for the proposed Project.

Significance After Mitigation. No new significant impacts are identified under this alternative.

4.10.3.5 Rail Access Only Alternative

Impacts. This alternative would result in a slight reduction in landfill capacity from 20,000 tpd to 18,000 tpd. A reduction in truck traffic to the Project site would not substantially alter the conclusions regarding windblown debris and dust impacts because waste transport by both rail or truck would be in enclosed containers. Dust impacts would not change because neither truck transport on paved roads nor rail transport create dust.

Mitigation. Mitigation would be the same as for the proposed Project.

Significance After Mitigation. No new significant impacts are identified under this alternative.

4.10.3.6 Landfill on Kaiser Land Only Alternative

Impacts. Construction of the landfill without the proposed land exchange between the BLM and Kaiser would limit landfill activities to approximately 399 acres, including the East Pit. Because this alternative would result in an approximate 85-percent reduction in the amount of area to be disturbed at the Project site, the resulting impact on windblown debris and dust would be potentially less compared with the proposed Project because landfill operations would be concentrated in a smaller area within the Project site.

Mitigation. Mitigation would be the same as for the proposed Project.

Significance After Mitigation. No new significant impacts are identified under this alternative.

4.10.3.7 Landfill Development/No Townsite Development Alternative

Impacts. Under this alternative, no improvements would be made to the Townsite. This alternative would not alter the conclusions regarding windblown debris and dust impacts and mitigation measures associated with the proposed Project. The potential for dust during Townsite development would be eliminated.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. No new significant impacts are identified under this alternative.

4.10.4 Nighttime Lighting

4.10.4.1 Proposed Action

Impacts. The landfill would operate 7 days per week, 24 hours per day. Although landfilling would occur only 6 days per week for 16 hours each day, waste could be transported to the facility 24 hours a day; therefore, the intermodal rail yards, landfill waste recovery facility, and other areas of the site that receive waste would be lighted during the night. Night lighting at the Project site could result in a potential for "skyglow." During certain atmospheric conditions (e.g., moonless nights, elevated moisture or dust), skyglow generated at the Project site could be more significant. The degree of skyglow effects would depend upon existing nighttime lighting conditions as well as the viewing location.

The proposed areas of the Project site requiring nighttime lighting (e.g., site entrance, primary rail yard, vehicular weigh station, local waste receiving center, and truck marshaling yard) would be located adjacent to or near existing light sources. The major existing nighttime light source in the Project site is the Townsite (e.g., correctional facility, street lighting), which, as described in Section 3.10.3, is a substantial existing source of light, visible for more than 30 miles from the Project site. Therefore, given the existing nighttime lighting conditions, Project lighting would not significantly change the nighttime character in the vicinity of the Project.

The Project site is remote. Land uses in the site vicinity that would be considered light-sensitive are primarily the backcountry wilderness areas along the perimeter of the JTNP boundary. Because of the prohibition of motor vehicles, the harsh desert conditions (e.g., temperature), and the fact that backpacking is contingent on the amount of water that can be carried by an individual, the visitor use in the JTNP wilderness areas of the Eagle and Coxcomb Mountains is expected to be very low, particularly at night. Users seeking a wilderness experience, however, would be the most sensitive to unnatural light intrusion. The potential for visible skyglow would be the lowest in areas where intervening topography blocks direct views of the night sky immediately above the site. For example, for recreationists that might be present in the Pinto Basin, the Eagle Mountains would block views of the night sky above the Project site, and it is expected that additional skyglow attributable to the Project would not be noticeable, regardless of atmospheric conditions. Areas where night lighting could be more directly visible would be within the Project viewshed (see Figure 3.10-2), including the Chuckwalla Valley and small portions of the Eagle and Coxcomb Mountains. Again, because of the existing level of night illumination attributable to the community correctional facility, the Project is not expected to increase significantly the skyglow or night illumination as seen from the JTNP.

The other potential light source resulting from the Project would be gas flares from the gas collection system. All flares located on the landfill would be enclosed and would not be a light source or produce a visible flame.

Reflective spot glare (i.e., intense focused reflection from a surface usually created by sunlight) from the proposed Project would be created by vehicle windshields and building

windows. The most significant potential impact from reflective spot glare involves interfering with the visibility of motorists and causing a safety hazard. The small amount of glare generated by the Project and the distance of major roadways from the site eliminates this as a concern. The other potential impact is creation of a frequently noticeable distraction to JTNP users that would degrade their recreational and/or wilderness experience. Because of the sun's angle in the sky, reflected glare from vertical building windows would be directed downward and would not be visible to pedestrians or motorists at an elevation equal to or above Project buildings. Views of facility structures from within the JTNP would be largely from mountain areas, which are above the buildings, and would not be affected by reflected glare.

Vehicle windshields are often at an angle from vertical and could potentially be a source of reflected spot glare at certain periods of the day. The time of day would depend on the viewer location, windshield angle, and sun angle. JTNP users in the Eagle Mountains with direct views of the Project site could potentially experience brief flashes of glare from vehicles associated with Project operation. The frequency of experiencing glare would be low because of the low number of users in this wilderness area and the specific set of conditions necessary for the glare to be seen (i.e. viewer position, sun angle, and vehicle position and orientation all in alignment). Furthermore, viewers in the Eagle Mountains in a position to notice glare from the site would largely be close enough to the site to notice the landfill operation and its facilities and would therefore already be exposed to the Project's visual features. More distant viewers in the Coxcomb Mountains and some parts of the Eagle Mountains would also have direct views of the Townsite and existing area roads. These existing features are an existing source of glare, and the Project would not add significantly to the existing condition. For the reasons discussed, no significant reflected glare impacts attributable to Project facilities and vehicles are anticipated.

BLM/Kaiser Land Exchange and FLPMA Roads/Railroads Right-of-Way Grants

The proposed land exchange and road/railroad right-of-way grants would not have a significant impact on night lighting. Truck traffic would use Interstate 10 and Eagle Mountain Road and would avoid traveling through, or in direct proximity to, residential areas near Desert Center or Lake Tamarisk. At full operation, up to five trains per day would transport waste to the landfill; about one-half of these trains would operate at night. Neither the railroad corridor nor the road corridor itself would be lighted.

Mitigation. A nonreflective material and glass would be used for building construction and equipment at the Project site to reduce glare from the reflection of the sun from reflective surfaces of maintenance and administration buildings. Lighting standards will also be implemented.

The potential for increased "skyglow" in the vicinity of the Project would be minimized by providing shielded lighting directed downward at the landfill. Landfill activities would be limited, and would cease at 10:00 p.m., thus further reducing potential for sky glow. Transfer trucks would be prohibited at the landfill from 10:00 p.m. to 6:00 a.m. resulting in decreased lighting attributable to trucks. Low-pressure sodium safety and security lights would be used.

The specific lighting requirements would vary, depending on the size and shape of the area, mounting height of the lighting, and illumination requirements for the different site operations.

Significance After Mitigation. Nighttime lighting associated with the proposed Project would not create a significant visual impact in the Project area. Implementation of the proposed mitigation would further reduce any minor effects caused by nighttime lighting during Project operations.

4.10.4.2 No Action Alternative

Impacts. The No Action Alternative would result in no discernible change to current levels of night lighting resulting from existing security and building lights at the Eagle Mountain Townsite.

Mitigation. No mitigation measures are warranted or recommended.

Significance After Mitigation. No new significant impacts are identified under this alternative.

4.10.4.3 Reduced Volume of Onsite Disposal Alternative

Impacts. The effect of the reduced onsite disposal alternative on the potential impact of night lighting would be essentially identical to the proposed Project. However, because the Reduced Onsite Disposal Alternative would extend the life of the landfill by approximately 20 years, the overall nighttime lighting impact associated with Project operations would be greater compared to the proposed Project because this impact would be extended over a longer period of time. In consideration of the existing nighttime lighting conditions at the adjacent Townsite, however, Project lighting under this alternative would not significantly change the Project vicinity's nighttime visual character. Implementation of mitigation identified for the proposed Project would further reduce any minor effects caused by nighttime lighting during Project operations under this alternative.

Mitigation. Mitigation would be the same as for the proposed Project.

Significance After Mitigation. No new significant impacts are identified under this alternative.

4.10.4.4 Alternate Road Access Alternative

Impacts. Under the Alternate Access Road Alternative, transfer trucks would use the existing Kaiser Road to bring waste to the landfill. Compared to the proposed Eagle Mountain Road route, truck travel on Kaiser Road would pass directly through Desert Center and past Lake Tamarisk, adjacent to residential areas. Therefore, this alternative would have a slightly higher impact than the proposed Project because of the increased number of truck and passenger vehicles headlights traveling adjacent to more sensitive residential areas. In consideration of the temporal effect of traffic headlights, as well as the existing level of

nighttime lighting on this road (between Desert Center Rice Road and Lake Tamarisk Drive, Kaiser Road carries 424 vehicles per day; north of Lake Tamarisk Drive it carries 286 vehicles per day), nighttime lighting impacts associated with this alternative would be less than significant.

Mitigation. Mitigation would be the same as for the proposed Project.

Significance After Mitigation. No new significant impacts are identified under this alternative.

4.10.4.5 Rail Access Only Alternative

Impacts. A reduction in truck traffic to the Project site would not substantially change the results of the nighttime lighting impact analysis performed for the proposed Project. This alternative would eliminate any increase in truck traffic headlights traveling on Eagle Mountain Road in the Project area. This reduction in traffic headlight glow, however, is not anticipated to alter substantially the conclusions regarding nighttime lighting impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation would be the same as for the proposed Project.

Significance After Mitigation. No new significant impacts are identified under this alternative.

4.10.4.6 Landfill on Kaiser Land Only Alternative

Impacts. Construction of the landfill without the proposed land exchange between the BLM and Kaiser would limit landfill activities to approximately 399 acres, including the East Pit. Although this alternative would result in an approximately 85-percent reduction in the amount of area to be used for landfilling at the Project site, the resulting nighttime lighting impact would be essentially identical to that described for the proposed Project because, under both scenarios, activities that would require operation at night (i.e., operations associated with waste transport and receiving) would remain the same.

Mitigation. Mitigation would be the same as for the proposed Project.

Significance After Mitigation. No new significant impacts are identified under this alternative.

4.10.4.7 Landfill Development/No Townsite Development Alternative

Impacts. Under this alternative, no improvements would be made to the Townsite. This alternative would not alter the conclusions regarding nighttime lighting impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. No new significant impacts are identified under this alternative.

4.10.5 Recreational Resources

4.10.5.1 Proposed Action

Impacts. As discussed in the existing conditions for recreation (Section 3.10.4), within the CDCA, the areas adjacent to the Project site most accessible to recreationists are JTNP and wilderness areas administered by the BLM. Direct adverse impacts to recreational resources at the proposed Project would not occur. There are no designated recreational areas within or proximate to the Project boundaries that would be affected or displaced by landfill-related activities. Renovation of the Townsite will result in a net beneficial effect of recreational upgrades to existing open space.

There will be no reduction in size of offsite recreational areas as a result of Project implementation (e.g., recreational use is presently restricted or prohibited on much of the private mining and utility holdings in the area and the Project site would not impede opportunities for recreationists to hike or backpack in the Eagle or Coxcomb Mountains). There are no nearby areas for off-road vehicle use. The specific plan for the Townsite would identify and set aside open space/recreational areas. Project-related transportation rights-of-way (i.e., rail and roadway) would have no significant impact on existing recreational resources. As a result of the proposed land exchange, the BLM lands that are undisturbed would increase, resulting in a positive impact.

California Desert Conservation Area. There is no evidence that the proposed Project would directly or indirectly result in degradation or loss of recreational opportunities, either within the immediate vicinity of the Project site or the CDCA (see Figure 3.11-1 for the boundaries of the CDCA). Although development of the landfill, as well as the Townsite, would result in limited increases in local population, commerce, and services, this increase is unlikely to generate a significant increase in local resident or tourist use of CDCA recreational resources.

The BLM applies four land use classifications for implementing its goal of "multiple use" and "sustained yield" (see Section 3.5.3.1). The Project site is immediately bordered by Class I lands to the north and west and by Class M lands to the south and east (see Section 3.5.3.1 and Figure 3.5-5). Class I (Intensive) is designed to provide use of lands and resources to meet human needs. It permits intensive land uses with reasonable mitigation and protection of sensitive resources, and is the most consumptive, use-oriented class. Class M (Moderate) provides for a wide variety of present and future uses under the principles of multiple use and sustained yield of renewable resources. It provides for tradeoffs between uses on the occurrence of conflicts and mitigation of damages caused by permitted uses. Current recreational uses/opportunities on these lands would be unaffected by the proposed Project.

Within the CDCA, the BLM administers wilderness areas used by recreationists. These areas have no established recreational facilities, and activities are limited to backpacking and

hiking in the rugged desert terrain. The wilderness areas administered by the BLM and within 30 miles of the Project site are discussed in Section 3.11.5.1 and shown in Figures 3.11-2, 3.11-3, 3.11-4, and 3.11-5. Because of the limited use of these areas by recreationists, their distance from the Project site, and their limited views of the Project site from intervening mountain ranges, there are no expected impacts to recreational resources of these areas from the proposed Project.

Joshua Tree National Park. The proposed Project would not directly or indirectly result in degradation or loss of recreational opportunities within JTNP. Existing NPS management policies regarding use of park resources, specifically "... encourage people to come to the parks, and to pursue inspirational, educational, and recreational activities related to the resources found in these special environments..." (NPS, 1988). Recreational activities that are allowed in units of the park system include, but are not limited to, picnicking, camping, bicycling, fishing, hiking, horseback riding and packing, outdoor sports, caving, mountain and rock climbing, subject to provisions of 36 CFR 1-5, 7, and 13.

Although development of the landfill and the Townsite would result in limited increases in local population, commerce, and services, this increase is unlikely to generate a significant increase in local resident/tourist use or illegal access to JTNP recreational resources. In addition, the majority of designated park attractions (e.g., designated trails and visitor facilities are located at a distance (greater than 40 miles) from the Project site and intervening mountain ranges (i.e., Eagle Mountains) block these views from the west to the east. Although the areas of JTNP in the immediate vicinity of the Project site could be visited and viewed by hikers or backpackers, there are no designated trails or campsites in the area, motor vehicles are prohibited (thus limiting access), and visitor use is contingent upon the severity of the desert temperatures and dependent on the amount of water a person can carry in the desert environment. The area is already extensively developed with utility infrastructure (e.g., MWD pumping station, Townsite, transmission corridors) and subject to frequent overflights by commercial and military planes.

The nearest designated visitor facilities are in Cottonwood Campground and Visitor Center, which is located approximately 20 miles southwest of the Project site. Although the borders of JTNP are within approximately 1.5 miles of the Project site, there are no camping facilities, visitor centers, or established trails in the vicinity of the Project site. With the exception of the Cottonwood Campground and trail in the southern part of JTNP (approximately 20 miles from the proposed Project site), the majority of JTNP recreational facilities and visitor attractions are more than 40 miles distant from the Project site in the western portions of the park (see Figure 3.10-4).

The use of motor vehicles is allowed on park roads and parking areas, as well as routes and areas designated for off-road motor vehicle use. The use of off-road motor vehicles is governed by Executive Order 11644 amended by Executive Order 11989, "Use of Off-road Vehicles on Public Lands" (42 USC4321), which requires that routes and areas of off-road vehicle use be designated by agency regulation. Within the national park system, routes and areas may be designated for off-road motor vehicle use only by special regulation and only in national preserves, national seashores, national lakeshores, and national recreation areas.

Routes and areas may be designated only in locations where there will be no significant adverse impacts on the area's natural, cultural, and scenic resources and values, and in consideration of other visitor uses.

There is no official eastern entrance to JTNP along which visitors and recreationists would pass to traverse the Pinto Basin or to join the main road through the park (i.e., Pinto Basin Road, see Figure 3.10-4) to the area most frequented by visitors. (There is, however, four-wheel-drive access to the southern reach of the Pinto Basin in the northern Chuckwalla Basin near the Colorado River Aqueduct. This unpaved road terminates approximately 1/4 mile within JTNP where further vehicular access is blocked by fencing.) Most visitors will continue to enter JTNP from either the Joshua Tree/west entrance (more than 40 miles from the Project site) or the Cottonwood/south entrance (more than 20 miles from the Project site). Fewer visitors will use the northern entrance at Twentynine Palms (more than 40 miles from the Project site). The JTNP General Management Plan (NPS, 1995c) includes substantial expansions/renovations to visitor information facilities at these entrance points, as well as enhanced park boundary security modifications to reduce the likelihood of illegal access.

Mitigation. No additional mitigation measures beyond those associated with existing requirements and aspects of the proposed Project are necessary or warranted.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design will likely result in a potential for impacts to recreational resources which is below the threshold of significance.

4.10.5.2 No Action Alternative

Impacts. The No Action Alternative would preclude the occurrence of any potential impacts to recreational resources associated with the Project.

Mitigation. No mitigation measures are required for this alternative.

Significance After Mitigation. The potential for impacts to recreational resources is not significant for this alternative.

4.10.5.3 Reduced Volume of Onsite Disposal Alternative

Impacts. The potential impacts under this alternative would be essentially identical to those of the proposed Project. A change in landfill volume/configuration would not substantially alter the anticipated use of recreational resources in the vicinity of the proposed Project. Although there would be a slight decrease in the number of employees needed to operate the landfill, the recreational resources are adequate to meet the recreational demands of the employees expected at full operation of the landfill. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into a reduced-scale Project design would result in a potential for impacts to recreational resources that is below the threshold of significance for this alternative.

4.10.5.4 Alternate Road Access Alternative

Impacts. The potential impacts under this alternative would be identical with those of the proposed Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would result in a potential for impacts to recreational resources that is below the threshold of significance for this alternative.

4.10.5.5 Rail Access Only Alternative

Impacts. The potential for impacts under this alternative would be identical with those of the proposed Project. A change in landfill volume/configuration would not alter the assumptions regarding recreational resources. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would result in a potential for impacts to recreational resources that is below the threshold of significance for this alternative.

4.10.5.6 Landfill on Kaiser Land Only Alternative

Impacts. The potential impacts under this alternative would be identical with those of the proposed Project. A change in landfill volume/configuration would not alter the assumptions regarding recreation resources. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would result in a potential for impacts to recreational resources that is below the threshold of significance for this alternative.

4.10.5.7 Landfill Development/No Townsite Development Alternative

Impacts. The potential impacts under this alternative would be essentially identical to those of the proposed Project. Elimination of further development of the Townsite would not alter the assumptions regarding recreational resources. Such an elimination would be unlikely to result in a major decrease in the number of employees needed to operate the landfill; however, elimination of additional Townsite development would tend to further diminish potential impacts as a result of decreased local population. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the proposed Project.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would result in a potential for impacts to recreational resources that is below the threshold of significance for this alternative.

4.11 Wilderness

This section assesses the potential for the proposed Project to have environmental impacts to wilderness resources as well as the "wilderness experience" of individuals. Wilderness is defined in Section 2 (c) of the Wilderness Act of 1964 (16 U.S.C. 1131-1136—also see Section 3.11.6.4 in this environmental impact statement/environmental impact report (EIS/EIR) for a detailed discussion of the Act's provisions) as "an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain." The Act further defines wilderness as "an area of undeveloped Federal land retaining its primeval character, without permanent improvements or human habitation" that "(1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological or other features of scientific, educational, scenic, or historical value."

In this EIS/EIR, impacts on wilderness are discussed in two categories. The first category is ecologically based, (or "wilderness as a resource"), and focuses on managing wilderness as a distinct resource with component parts (i.e., individual resources of air, water, biological resources that interact as a single ecological unit). The analysis focuses on the wilderness area user's sensory experience while using wilderness resources. Potential impacts to wilderness resources are defined to include the range of potential impacts associated with the physical environment making up wilderness areas, including air, water, and biological resources.

The second category is that of a social element (or "wilderness experience") that focuses on wilderness as the personal experience of individuals in a setting of solitude. Neither the National Environmental Policy Act (NEPA) nor the California Environmental Quality Act (CEQA) require evaluation of potential impacts on intangible (i.e., nonphysical) concepts or issues (e.g., *Goleta Union School District v. Regents of the University of California* [1995]). NEPA does, however, require the examination of "social and economic impacts" when an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated" (40 Code of Federal Regulations [CFR] Section 1508.14). This EIS/EIR does evaluate the potential for the Project to impact the "wilderness experience" in addition to evaluating the potential impacts of the Project on wilderness resources. Unlike "wilderness as a resource," which can be measured according to objective standards, the quality of the "wilderness experience" depends on subjective personal assessments that reflect varying degrees of sensitivity to particular impacts (e.g., noise) in a wilderness setting. Potential impacts to wilderness resources are assessed as a physical component of the wilderness experience. The human response to identifying and evaluating the "wilderness experience," however, is not quantifiable or objectively measurable.

4.11.1 Standards of Significance

The standards of significance are based upon the significance criteria cited in the resource categories throughout Section 4 of this EIS/EIR. As part of assessing the potential impacts to wilderness, these significance criteria also take into consideration relevant portions of the Bureau of Land Management's (BLM's) and National Park Service's (NPS's) management guidance for wilderness areas (see Section 3.11). Within the newly designated areas of Joshua Tree National Park (JTNP), the majority of land is designated as wilderness. For the analysis conducted for this EIS/EIR, potential impacts to wilderness are most pertinent to the new park-administered lands in portions of the Eagle Mountains and the Coxcomb Mountains. The nearest JTNP boundary is within approximately 1.5 miles of the proposed Project site in the Pinto Basin area north of the boundary of the Landfill Specific Plan. This JTNP boundary also represents the nearest wilderness boundary. Between this JTNP boundary and the Project site, the northern reaches of the Eagle Mountains intervene. The nearest JTNP boundary that is south of the Project site is also approximately 1.5 miles south in the northeastern area of the Eagle Mountains. The wilderness area closest to this JTNP boundary is approximately 3 miles from the JTNP border. Those areas and the nonwilderness lands in JTNP are shown in Figure 1–2.

This section summarizes those resource-specific criteria from Chapter 4, Environmental Consequences, that comprise wilderness in addition to the subjective wilderness experience. In addition to using applicable significance criteria throughout Chapter 4 that are based on federal statutes and regulations (e.g., Endangered Species Act, Clean Air Act), the significance criteria for wilderness take into consideration the BLM's and NPS's management guidance based on the Wilderness Act of 1964 (e.g., *Natural Resources Management Guidelines*, NPS-77; NPS, 1991) and other federal land management legislation for evaluating and mitigating impacts to natural resources. In addition to the specific management guidance, the BLM and NPS address potential impacts to wilderness by preparing NEPA documents (for actions within federally administered lands) or participating as lead or cooperating agencies in the NEPA and CEQA process (for actions outside federally administered lands).

Standards of significance for assessing impacts to wilderness are discussed in terms of the two basic elements that comprise wilderness: (1) wilderness as a social element (or "wilderness experience") with characteristics such as solitude; and (2) wilderness as a resource to be managed according to individual components (e.g., air, water, biological resources) that interact as a single ecological unit (see Section 3.11).

4.11.1.1 BLM and NPS Guidance

Although the BLM's and NPS's management guidance does not apply to private lands and neither agency sanctions the creation of buffer zones on private lands (see Section 3.11), the BLM's and NPS's policies governing their management of federal lands is used to assess the potential for the Project to impact wilderness. To the extent possible, significance thresholds for assessing the Project's impact on wilderness as an experience are based upon measurable

changes in the physical environment that could affect a user's sense of sight, sound, or smell (e.g., noise levels, levels of pollutant emissions). In consideration of these factors, the following significance criteria have been prepared:

- In the absence of specific NEPA or CEQA guidance on establishing criteria for evaluating the wilderness experience, the Project would be considered to have a significant effect on the wilderness experience if it:
  - Introduces a substantially visible light source to an area occupied with potential sensitive receptors (e.g., campers in designated wilderness) where no night lighting is currently visible
  - Results in a visual contrast with the surrounding landscape from views within a designated wilderness that exceeds the contrast rating acceptable for the visual resource management classification for that area
  - Reduces visibility from wilderness areas attributable to the landfill emissions below significance thresholds calculated in the PLUVUE II model
  - Increases the amount of windblown debris and/or dust in the wilderness area
  - Results in noise level increase greater than 3 A-weighted decibels (dBA) at an off-site receptor location, provided that a wilderness area located near the noise source will be impacted and that a 65 Community Noise Equivalent Level (CNEL) noise contour must extend far enough from the noise source to adversely affect any wilderness areas
  - Results in the increase in emission of any odorous substance that causes the ambient air at any wilderness area to be odorous and to remain odorous subsequent to its dilution with four parts of odor-free air or to exceed any applicable odor threshold for a specific compound

In this EIS/EIR, "wilderness as a resource" is measured according to objective standards based on laws, regulations, or professional judgment cited throughout Chapter 4, Environmental Consequences, of this EIS/EIR. The quality of the individual "wilderness experience," as distinct from the resource based element, is, in part, contingent upon subjective personal experience that corresponds to varying degrees of sensitivity to particular impacts (e.g., visibility) in a wilderness setting. Evaluating a wilderness experience depends on individual interpretations of qualitative concepts (i.e., solitude). Although mitigations can be applied to specific wilderness resources, they are not applicable to individual experiences because every person's interaction with wilderness and interpretation of that interaction is unique (Rolston, 1985 and 1988; Driver, Nash, and Haas, no date). Because of the subjective nature of evaluating the intangibles associated with a wilderness experience, it is possible that the proposed Project could result in significant impacts to the wilderness experience for some individuals, despite the implementation of mitigation measures that reduce the impacts to wilderness resources to below the level of significance. For example, even if there is no significant impact to a wilderness resource or if a significant impact could be mitigated with appropriate mitigation measures, an individual could still have significant impacts to his or

her "wilderness experience" just by knowing that a project existed or an activity was occurring, even if the activity did not produce physical effects on the environment.

4.11.2 San Diego Superior Court Ruling on Previous EIR

The 1994, San Diego County Superior Court Judgments and Writ of Mandate found that the evidence in the record did not support the conclusion of no significant adverse impacts on the wilderness experience associated with the JTNM (see Section 1.2.1). Since that ruling, the monument has been designated as a national park; and additional wilderness acreage has been added to the new JTNP (see Section 3.11.6.5). In addition to discussing impacts to the JTNP wilderness experience, this evaluation also discusses impacts to wilderness resources as a result of implementing the proposed action.

4.11.3 Proposed Action

4.11.3.1 Impacts

This section discusses the potential impacts to wilderness areas under the proposed action. The significance criteria and the potential impacts pertaining to impacts on wilderness are: (1) Nighttime Lighting, (2) Visual Resources, (3) Visibility, (4) Windblown Debris, (5) Noise, and (6) Odor. These potential impacts, assessed both as a "resource" and in terms of an individual "experience," are addressed in the context of aesthetics. The NPS defines an aesthetic value as one that is "attributed by people to natural unmanipulated conditions and is perceived through the senses—by seeing, hearing, touching, smelling, and tasting" (NPS, 1991, Chapter 2, p. 204). In addition to clear night skies, aesthetics also apply under NPS guidelines to scenic vistas and natural quiet, and noise. Although NPS does not specifically address windblown debris under its guidance (NPS, 1991), for this EIS/EIR, windblown debris is considered to be an aesthetic value. Aesthetics of the built or cultural environment are not addressed by NPS guidelines.

An important component of evaluating impacts is based on terminology used by the BLM and the NPS to assess impacts. The guidance documents of both the BLM and NPS recognize that impacts to resources can occur and that a way in which to address these impacts is to implement appropriate mitigation measures. NPS's management guidance (NPS 1991) provides park staff and managers with existing guidance and documentation of unwritten practices and procedures for natural resources management to ensure compliance with federal law and regulations and policies of the Department of the Interior and NPS.

The BLM uses the term "degradation" as a criterion for assessing potential impacts to wilderness. The BLM defines unnecessary or undue degradation as surface disturbance greater than what would normally result when an activity is being accomplished by a prudent operator in usual, customary, and proficient operations of similar character and taking into consideration the effects of operations on other resources and land uses, including those resources and uses outside the area of operations. Failure to initiate and complete reasonable mitigation measures, including reclamation of disturbed areas, or creation of a nuisance may

constitute unnecessary or undue degradation. (BLM, *Management of Designated Wilderness Areas*-Glossary). "Unnecessary or undue degradation" also includes failure to comply with applicable environmental protection statutes and failure to initiate and complete reasonable mitigation measures, including reclamation of disturbed areas. Factors to consider in determining degradation of wilderness include the different levels of wilderness characteristics and the different capabilities of wild lands to sustain varying types and amounts of use (*BLM, Management of Designated Wilderness Areas*-8560.08.A.3).

The NPS's Organic Act (see Section 3.11) uses the term "impairment" to assess impacts to natural resources within park boundaries, including impacts in wilderness areas. Defining "impairment" of park land is an NPS management decision that must consider "the spatial and temporal extent of the impacts, the resources being impacted and their ability to adjust to those impacts, the relation of the impacted resources to other park resources, and the cumulative as well as the individual effects" (NPS, *Management Policies*, 1988, p. 1-3). During the agency scoping meetings with the NPS for this EIS/EIR, potential statutes and other criteria for assessing potential impacts to wilderness were discussed. NPS received and reviewed draft standards of significance for use in this EIS/EIR, including standards for wilderness. According to NPS, "mitigation" is "the maintenance of the existing form and integrity of national systems or system components, consistent with park management objectives, in the face of harm or potential harm from human activities within or outside the park. Mitigation is also the conversion of a resource, altered by human activity, to a more functional or natural state consistent with management objectives. As such, mitigation encompasses preservation and restoration activities." (NPS, 1991, Chapter 1, p. 2)

Nighttime Lighting. This section discusses the "skyglow" impacts to JTNP wilderness attributable to the proposed action. Additional discussion of nighttime lighting is in Sections 3.10.3 and 4.10.4.

Potential impacts to wilderness areas from nighttime lighting include intrusion of unnatural light sources that diminish the aesthetic enjoyment of an individual's wilderness experience. The NPS considers nighttime lighting to be an intangible aesthetic value that relates to a "visitor's perception of a park and its surroundings through the senses, including solitude" (NPS 1991, Chapter 2, p. 204). Specifically in relation to artificial lighting, NPS's management policies direct park managers to cooperate with adjacent landowners to "seek to minimize the intrusion of artificial light into the night scene in parks with natural dark" (NPS, 1991, Chapter 2, p. 204). NPS's management guidance further states that "In natural areas, artificial outdoor lighting will be limited to basic safety requirements and will be shielded when possible" (NPS 1988, Chapter 4:18).

Unnatural light intrusion could have an impact on an individual's wilderness experience. The JTNP wilderness areas in the northern Eagle Mountains and the Coxcomb Mountains would be the most sensitive to changes in nighttime lighting. Visitor use in this area, however, is expected to be low, particularly at night because there is no vehicular access to JTNP and no visitor services (including drinking water), and campfires are prohibited (see Section 4.10.5). Under existing conditions, lights from the correctional facility, which are visible more than

30 miles away, are the major nighttime light sources at the Project site. For the proposed action, portions of the landfill site (e.g., the intermodal rail yards, landfill waste recovery facility) will require night lighting that could result in additional "skyglow." Areas of the Project site requiring nighttime lighting would be located adjacent to or near existing light sources.

In the Pinto Basin, the Eagle Mountains would block views of the night sky above the Project site and additional skyglow attributable to the Project would not be noticeable from that area. Because of the existing level of nighttime lighting of the community correctional facility, the Project would not increase the skyglow as seen from JTNP. Gas flares from the gas collection system are not a potential Project-related light source, because all flares located on the landfill site will be enclosed and would not be a light source or produce a visible flame. Neither the railroad corridor nor the road corridor will be lighted.

Because of the existing intensity of the lights from the correctional facility and the proposed design features of the proposed action (i.e., enclosed flares), the lighting attributable to the proposed Project would not change the nighttime character in the vicinity of the Project and there would be no impact from "skyglow."

Visual Resources. This section discusses the viewing impacts to wilderness attributable to the proposed action. The existing conditions and environmental impacts pertaining to visual resources are discussed in Sections 3.10 and 4.10, respectively.

Even though the recreational use of the designated wilderness areas in the north Eagle Mountains of JTNP is low (see Sections 3.5, 4.5, 3.10, 4.10, and 3.11) and the opportunity for seeing the proposed Project site is considered moderate to low, this location was conservatively rated as a highly sensitive viewing location because part of the area has national park status, including wilderness areas. The locations where the proposed Project will be visible from within the wilderness areas are generally higher elevation where either the mine site or other human development in the Pinto Basin or Eagle Mountains (i.e., towns, roads, power lines, aqueducts) are also visible.

The visual analysis (see Section 4.10.2) indicates that the proposed landfill will have the same or a lower visual contrast with the surrounding environment as does the existing condition (i.e., the previously mined lands). Because the Project site is extensively disturbed from previous mining operations and is in the background of views from the key observation points (KOPs), the visual contrast level is moderate to moderately low for both the existing condition (i.e., the disturbed land from the mining operations) and the proposed action. This ranking is well within the visual resource class (VRC) IV classification for the majority of the Project site and would not result in a significant visual impact.

Reflective spot glare (i.e., intense focused reflection from a surface usually created by sunlight) from the proposed Project would be created by vehicle windshields and building windows. The most significant potential impact from reflective spot glare involves interfering with the visibility of motorists and causing a safety hazard. The small amount of

glare generated by the Project and the distance of major roadways from the Project site eliminates this as a concern. The other potential impact is creation of a frequently noticeable distraction to JTNP users that would degrade their recreational and/or wilderness experience. Because of the sun's angle in the sky, reflected glare from vertical building windows would be directed downward and would not be visible to pedestrians or motorists at an elevation equal to or above Project buildings. Views of facility structures from within the JTNP would be largely from mountain areas, which are above the buildings, and would not be affected by reflected glare.

Vehicle windshields are often at an angle from vertical and could potentially be a source of reflected spot glare at certain periods of the day. The time of day in which impacts could occur would depend on the viewer location, windshield angle, and sun angle. JTNP users in the Eagle Mountains with direct views of the Project site could potentially experience brief flashes of glare from vehicles associated with Project operation. The frequency of experiencing glare would be low because of the low number of users in this wilderness area and the specific set of conditions necessary for the glare to be seen (i.e., viewer position, sun angle, and vehicle position and orientation all in alignment). Furthermore, viewers in the Eagle Mountains in a position to notice glare from the site would already be close enough to the site to notice the landfill operation and its facilities, and would therefore already be exposed to the Project's visual features. More distant viewers in the Coxcomb Mountains and some parts of the Eagle Mountains would also have direct views of the existing Townsite and existing area roads. These existing features are an existing source of glare, and the Project would not add significantly to the existing condition. For the reasons discussed, no significant reflected glare impacts attributable to Project facilities and vehicles are anticipated.

Visibility. This section discusses the visibility impacts to wilderness, including the impacts of dust, attributable to the proposed action. The existing conditions and environmental impacts pertaining to visibility are discussed in Sections 3.4 and 4.4, respectively.

The NPS participates in air resources management through the provisions of the Clean Air Act and the Environmental Protection Agency's (EPA's) implementing regulations for Class I areas (NPS, 1991). To address visibility protection from potential sources inside park boundaries, park managers must ensure that all air pollution sources within parks comply with all federal, state, and local laws and regulations pertaining to air quality.

The NPS's role in visibility protection from potential sources outside park boundaries is to direct its concerns and recommendations to the governmental agency with the authority to regulate existing sources or permit new sources (NPS 1995, Chapter 2, p. 191). As a cooperating agency for this EIS/EIR, NPS has participated in both public and agency scoping meetings to review air quality protocols and comment on in-progress, draft, and final impacts evaluation. NPS also participates in the planning process by: (1) reviewing impacts of new air pollution sources (i.e., resource management planning with other federal agencies and reviewing permit applications for new sources); and (2) participating in legislative and regulatory development (i.e., working cooperatively with states on Sate Implementation Plans

and redesignating areas to provide greater or lesser protection) (NPS 1995, Chapter 2, p. 192-3).

The proposed landfill could be a potential source of dust that could affect visibility in the wilderness areas of JTNP. Unpaved roadbeds and other exposed areas could also be a source of fugitive dust. A detailed discussion of the Project's visibility impacts is presented in Section 4.4, Air Quality. In general, the Project would not create a noticeable change in regional visibility or haze; and the gas flares would not create a plume that is noticeable to the casual observer from locations at the closest boundaries of JTNP to the Project site. Dust and diesel exhaust from trucks and landfill equipment could, at times, create a hazy plume above the landfill as seen from the closest boundaries of JTNP. The Project will also include measures to mitigate potential fugitive dust emissions including the application of nontoxic chemical dust suppressants to unpaved roads and parking areas, prewatering of soil prior to excavation, covering inactive exposed soil areas or spraying with dust suppressants, and a visual monitoring station for potential impacts to JTNP.

Windblown Debris. This section discusses the potential impacts to wilderness of windblown debris attributable to the proposed action. The existing conditions and environmental impacts pertaining to windblown debris are discussed in Sections 3.10.3 and 4.10.3, respectively.

The NPS addresses windblown debris (i.e., litter) in its management guidance as a potential significant impact to the backcountry experience (NPS 1991, Chapter 3, p. 85). NPS considers litter to be "one of the easiest backcountry management problems to resolve" by encouraging the "pack-it-in, pack-it-out" philosophy, educating the public about the potential impacts, and enforcing litter abatement. Although NPS guidance (NPS, 1991) does not specifically address windblown debris (i.e., litter) as an aesthetic issue, this EIS/EIR assesses the potential for litter in the JTNP wilderness areas to be an aesthetic impact to the wilderness experience. The potential impacts to wilderness areas could include the diminution of an intangible aesthetic component of the wilderness experience (see Section 4.11.1).

The proposed landfill could be a source of litter in JTNP wilderness. Litter accidentally scattered during Project operations within the Project area, particularly in the JTNP, would degrade the overall scenic quality of the existing landscape. As described in Sections 2 and 4.10, litter at the landfill will be controlled and this potential impact mitigated in four ways: (1) waste compaction and soil covering, (2) portable litter control fencing, (3) litter patrols, and (4) minimized active working face. In addition, other mitigation measures dealing with potential litter impacts will be implemented, including interaction with the BLM, NPS, and the County to determine the most appropriate effective measures. These are discussed in detail in Section 4.10.2. These measures will be undertaken in compliance with all applicable state and federal regulatory requirements regarding litter control.

Noise. This section discusses the potential noise impacts to the JTNP wilderness areas and the wilderness experience that are attributable to the proposed action.

The NPS considers impacts to natural quiet to be those that cause "excessive or unnecessary unnatural sounds in and adjacent to parks" (NPS, 1991, Chapter 2, p. 303). To address potential impacts, NPS guidance specifies monitoring and further states that "action will be taken to prevent or minimize unnatural sounds that adversely affect park resources or values or visitors' enjoyment of them." (NPS 1991, Chapter 2, p. 204). With the exception of extensive utility infrastructure (e.g., MWD Colorado River Aqueduct, Eagle Mountain Pumping Station), existing transportation routes (e.g., Interstate-10), and several residential developments (e.g., Townsite, Lake Tamarisk), the lands surrounding the southeastern portion JTNP are relatively undeveloped. Ambient noise levels are attributable to wind, birds, coyotes, and other wildlife. Additional noise sources are the regular military and commercial overflights of the park and the traffic on Interstate-10, Highway 177, and Kaiser Road (see Section 3.11).

Specific Project noise-generating sources that have a potential to impact a wilderness user's experience include: (1) rail, (2) vehicles, and (3) construction and operation activities. The existing conditions and environmental impacts pertaining to noise are discussed in Sections 3.13 and 4.13, respectively.

Noise levels decrease with distance from a source. In general, noise levels from stationary sources (e.g., landfill operations and construction) will decrease by approximately 6 dBA for every doubling of distance because of sound waves spreading out as they travel away from a noise source. Topography, vegetation, and atmospheric conditions also reduce noise levels at locations remote from a source. None of these noise-reducing effects was included in the conservative estimates prepared for this EIS/EIR.

To establish existing noise levels in the JTNP wilderness areas, noise levels were measured at the east central border of JTNP nearest the Townsite and Eagle Mountain Railroad (i.e., the eastern edge of the Eagle Mountains). Existing noise levels at this location ranged from 26 dBA-equivalent noise level (L_{eq}) at nighttime, to 41 dBA-L_{eq} during daytime hours with an existing CNEL noise level of 39 dBA.

Rail. Based on measurements, existing noise levels at the JTNP wilderness area are approximately 39 dBA-CNEL. Train operations near JTNP would be along the eastern edge of the Eagle Mountains along the new JTNP boundary. In this area, the track extends approximately 5 miles south of the Project site along the existing Eagle Mountain Railroad track alignment. Noise levels at the JTNP boundary from train activities are expected to increase by an amount imperceptible to the human ear near the JTNP borders within 6,000 feet of the Eagle Mountain Railroad. Noise levels in the JTNP wilderness areas, which are approximately 3 miles from rail activities, are not expected to increase over existing conditions. Noise levels at the JTNP wilderness would be below the level of significance.

Vehicles. JTNP could also be affected by noise from vehicles, including waste-haul trucks arriving at the Project site. Although Project-related traffic noise is expected to increase the noise levels at the new JTNP boundary in the eastern Eagle Mountains by approximately

5 dBA, no discernible increases in noise levels are anticipated to occur within the wilderness areas inside the new park boundary.

Construction. Under the proposed action, noise would be generated by heavy equipment used during construction of the landfill and ancillary facilities.

Noise levels for landfill and ancillary facilities construction are conservative estimates (i.e., equipment operating constantly and simultaneously near the closest border to each receiver along the landfill boundary, no attenuation from intervening topography or vegetation, no attenuation from atmospheric conditions). These conditions do not reflect actual intermittent, short, construction activities noise levels that would occur during phased development of the landfill.

Noise levels during landfill construction at the JTNP and the JTNP wilderness area could increase by up to 7 dBA and 2 dBA, respectively. These levels are below the impact criteria for noise increases at the JTNP wilderness area. Noise levels would decrease as equipment moves further to the east from the JTNP boundaries as the landfill is developed in phases.

Calculated noise levels during ancillary facilities construction at the JTNP boundary and the JTNP wilderness area could increase by up to 9 dBA and 3 dBA, respectively. This is below the impact criteria set for the JTNP wilderness area.

Combined Noise Impacts. Combined noise impacts were calculated for normal Project operation, and include those produced by landfill operation, rail traffic and rail yard operations, container handling, and vehicle traffic to and from the site. Noise levels inside JTNP would vary depending on the distance and topography between the receiver location and the landfill operation. Using conservative estimates based on worst-case conditions for operating equipment onsite, the combined noise level increase at the JTNP wilderness area would be no greater than 2 dBA; this increase is below the standard of significance for noise impacts in the JTNP wilderness area.

Operations. Under the proposed action, noise from operations would be generated by several sources and processes, including:

- Heavy Equipment: Used during construction and operation of the landfill
- Moving Waste During Operations: Disposal and compaction of waste; moving waste from staging areas and intermodal rail yards
- Container Handling Equipment: Overhead cranes, container handlers, container transportation vehicles
- Miscellaneous Noise Sources: Equipment maintenance (short-term noise level increases of up to 85 dBA at 50 feet from the maintenance activity); waste inspection and receiving; other ancillary facilities (e.g., administrative buildings, employees, and

entrance and scale stations). Noise levels associated with the other activities mentioned will vary, but are not expected to contribute significantly to the combined noise levels from the onsite landfill operations.

Noise levels inside JTNP will vary depending on the distance and topography between the receiver location and the landfill operation. Average hourly L_{eq} noise levels at the nearest JTNP boundary (eastern edge of Eagle Mountains) from the container handling areas would range 40 to 45 dBA-L_{ea}. The noise levels in the JTNP wilderness area within the Eagle Mountains would be significantly lower because of the greater distance of the Project site from the wilderness than from the boundary of the park. The nearest wilderness boundary to the rail yard is approximately 3 miles. Average hourly L_{eq} noise levels at the JTNP wilderness area boundary nearest the rail yard would be 34 to 39 dBA. The resulting noise level increase at the JTNP wilderness area could range from 1 to 2 dBA, which is below the standard of significance for noise impacts in the JTNP wilderness, and which would be generally imperceptible to the human ear. Actual noise levels at the wilderness area are expected to be lower because of the topography between the rail yard and the wilderness area.

Odor. The potential for odor sources is associated with emissions from municipal solid waste residue containers during train transport, emissions from containers held in hot desert areas due to train delays, emissions from the landfill face, and emissions from the container washdown facility at the Project site.

Although each container used to transport waste will be watertight, each container also has a pressure vent to allow pressure inside the container to adjust to outside air pressure. Venting through the pressure vent can be caused by increases in temperature, which would cause air to expand forcing gas generated by the decomposition of the waste inside the container to the atmosphere. During transport, it is unlikely that decomposition would be anaerobic. The decomposition would mostly be by aerobic processes that produce carbon dioxide and water vapor rather than carbon dioxide, methane, and odorous volatile organic compounds (VOCs) caused by the anaerobic process. It is therefore unlikely, even in the event of a 24-hour train delay, that odors from containers would be even one-tenth of the odor thresholds. The impact would be reduced even further due to atmospheric dispersion.

For emissions from the landfill face, an analysis of the maximum impacts of odorous compounds expected for fugitive landfill gas was performed. After identifying the likely odorous substances expected in fugitive landfill gas, the maximum offsite impacts were calculated based on the maximum expected concentrations of odorous substances in landfill gas, and the maximum fugitive landfill gas emission levels. The results of this analysis show that the maximum offsite impacts are well below the corresponding detection thresholds for each substance analyzed. Consequently, emissions of fugitive landfill gas are not expected to result in a significant odor impact. Emissions from the container washdown facility at the Project site would only be a small fraction of the emissions from the landfill face and, accordingly, would have little, if any, impact on this analysis.

4.11.3.2 Mitigation

This section discusses mitigation measures identified to address potential impacts to wilderness resources. As noted above, the wilderness experience includes the sensory experience of wilderness as a resource, as well as the uniquely subjective individual experience of solitude. The identified mitigation measures address the wilderness resource component of impacts to wilderness.

Nighttime Lighting. The potential for increased "skyglow" in the vicinity of the Project will be minimized by providing shielded lighting directed downward at the landfill. The specific lighting requirements will vary, depending on the size and shape of the area, mounting height of the lighting, and illumination requirements for the different site operations.

Visual Resources. For visual impacts to wilderness, mitigation will include: (1) minimizing the acreage of the active landfill during Project operations to the lower acreages that would reduce the visual impact of landfill operations; (2) using cover materials from the moderate- to dark-gray colored overburden piles that will closely resemble the color of the surrounding natural landscape; (3) reducing the visual contrast of the final landfill's form and line by making the final contours more irregular and less even; and (4) grading the flat side slopes to include some undulation or shallow valleys to mimic natural ravines, and the top silhouette could be made more irregular to simulate surrounding peaks.

Visibility. For visibility, implementation of the Project design features will reduce the potential impact from dust to a less-than-significant level, including control of windblown litter and dust to a level below significance and no additional measures are required.

Noise. Although no noise impacts in the JTNP wilderness areas are expected to occur due to the Project, several mitigation measures designed to lower noise levels at Townsite receivers could reduce noise levels at the JTNP wilderness area. For rail, the projected diversion of much of the rail traffic to Rail Yard II would reduce noise levels at all residences in the Townsite to below the significance threshold and the adjacent JTNP wilderness areas. For vehicles, restricting the flow of nighttime truck traffic along Kaiser Road near the Townsite would sufficiently reduce the noise levels at all the receivers in the area, including JTNP, to below the significance criteria. Heavy truck traffic to the landfill would need to be restricted or reduced during nighttime hours until the Rail Yard II is completed. For landfill operations, prohibiting nighttime operations at Rail Yard I and restricting landfill operations to daytime hours (7:00 a.m. to 10:00 p.m.) would reduce all Townsite receivers to below the significance criteria.

For landfill construction, the following measures could be implemented to reduce the noise levels during construction.

- No construction on Sundays and legal holidays, or between the hours of 7:00 p.m. and 7:00 a.m. on other days.

- If nighttime construction is required, group construction activities together to avoid continuing periods of high disturbance.

- If nighttime construction is required, prohibit the use of gasoline-powered generators during construction activities. In place of these generators, a temporary power pole or connection to an existing electrical outlet to power the equipment and lighting needed for the nighttime operation would be used.

- Require all engine-powered equipment to have mufflers installed according to the manufacturer's specifications, and require all equipment to comply with pertinent equipment noise standards of the EPA.

If specific noise complaints are received during construction, one or more of the following noise mitigation measures can be implemented:

- Locate stationary construction equipment as far from nearby noise-sensitive properties as possible.

- Utilize stock piles as effective noise barriers when feasible.

- Shut off idling equipment.

- Install temporary or portable acoustic barriers around stationary construction noise sources.

Wilderness Experience. There are no known mitigation measures beyond those identified above for impacts to wilderness resources that would further address or mitigate potential impacts to an individual's wilderness experience. The Project's potential for impacting the largely subjective wilderness experience is addressed in Section 4.11.3.3, below.

4.11.3.3 Significance After Mitigation

Wilderness Resources. Nighttime lighting associated with the Proposed Action would not create a significant visual impact in the Project area. Implementation of the proposed mitigation would further reduce any minor effects caused by nighttime lighting during Project operations.

For visual impacts, the landfill will partially screen background mountains from some foreground, low-elevation viewpoints in the Townsite and the north Eagle Mountains in the JTNP. It will also be noticeable during operation and after final closure to some locations within the north Eagle Mountains of the JTNP and JTNP wilderness areas where the existing disturbed mine site is not visible.

For visibility, a local haze may be visible above the landfill resulting from dust and diesel exhaust generated by the Project during operation. A nonreflective material will be used for

building construction at the landfill site to reduce glare from the reflection of the sun from reflective surfaces of maintenance and administration buildings. Lighting standards will also be implemented.

For windblown debris, a small amount of windblown debris could be transported within the JTNP boundaries. The Project applicant will be required to remove any windblown debris from the JTNP.

Wilderness Experience. Because of the subjective nature of evaluating the intangible aspects of an individual's wilderness experience, it is possible that the proposed Project could significantly impact the wilderness experience for some individuals, despite existing conditions or the implementation of mitigation measures. For some individuals, as an example, the visual impacts associated with the proposed action could significantly impact an individual's "wilderness experience" despite: (1) the comparable visual ranking of existing conditions and the landfill, and (2) implementation of mitigation measures to mitigate potential visibility impacts as outlined above. The very general sense in which wilderness areas are defined for their resource values (see, e.g., J. W. Roggenbuck and others, *Defining Acceptable Conditions in Wilderness,* 1993, pp. 187-188) underscores the subjective nature of defining an individual's wilderness experience. Wilderness is a state of mind, a perceived reality, as opposed to a more objective collection of natural objects. (J. W. Roggenbbuck and others, Id. at p. 188) The general lack of monitoring of wilderness area management plans has resulted in the need for additional research to define "solitude" and the various factors that influence the quality of the wilderness experience. (David N. Cole, *Wilderness Management: Has It Come of Age?* pp. 360-361) As such, it is simply not possible to determine by any objective or quantifiable method if in any given instance the wilderness experience of an individual would actually be affected by the Project, even where impacts to wilderness resources have been mitigated to a level of insignificance. Given this state of uncertainty and lack of objective standards upon which to determine whether there has been any significant effect on the intangible wilderness experience, this EIS/EIR concludes that there may be a significant impact to the wilderness experience of some individuals remaining after mitigation.

4.11.4 No Action Alternative

4.11.4.1 Impacts

Under the No Action Alternative, the landfill would not be built; therefore, there would be no nighttime lighting, visual, visibility, windblown debris, noise, or odor impacts. The mine site would remain in its existing disturbed state. The existing community correctional facility would continue to operate and nighttime "skyglow" would continue to be seen for distances of up to 30 miles.

4.11.4.2 Mitigation

No mitigation measures are warranted or recommended.

4.11.4.3 Significance After Mitigation

No new significant impacts are identified under this alternative.

4.11.5 Reduced Volume of Onsite Disposal Alternative

4.11.5.1 Impacts

The effect of the reduced onsite disposal alternative on designated wilderness areas and the wilderness experience would be essentially identical to the Proposed Action. Because the Reduced Onsite Disposal Alternative would extend the life of the landfill by approximately 20 years, the overall nighttime lighting, visual, noise, and windblown debris impact associated with Project operations would be greater compared to the proposed action because this impact would be extended over a longer period of time. For nighttime lighting, however, the Project lighting under this alternative would not significantly change the Project vicinity's nighttime visual character.

4.11.5.2 Mitigation

Mitigation would be the same as for the Proposed Action.

4.11.5.3 Significance After Mitigation

No new significant impacts are identified under this alternative.

4.11.6 Alternate Road Access Alternative

4.11.6.1 Impacts

Under the Alternate Access Road Alternative, transfer trucks would use the existing Kaiser Road to bring waste to the landfill. Compared to the proposed Eagle Mountain Road route, truck travel on Kaiser Road would pass directly through Desert Center and past Lake Tamarisk, adjacent to residential areas. Therefore, this alternative would have a slightly higher impact than the Proposed Action for visual resources because of the increased number of truck headlights traveling adjacent to more sensitive residential areas. Nighttime lighting impacts associated with this alternative would be less-than-significant because of the existing lights from the correctional facility.

4.11.6.2 Mitigation

Mitigation would be the same as for the Proposed Action.

4.11.6.3 Significance After Mitigation

No new significant impacts are identified under this alternative.

4.11.7 Rail Access Only Alternative

4.11.7.1 Impacts

Under the Rail Access Only Alternative, the use of all refuse-hauling trucks from outside the Chuckwalla Valley and Blythe area would be eliminated. A reduction in truck traffic to the Project site would not substantially change the results of the nighttime lighting, visual, or odor impacts analysis performed for the proposed action. This alternative would eliminate: (1) any increase in truck traffic headlights traveling on Eagle Mountain Road in the Project area, (2) noise associated with truck traffic, (3) visibility impacts associated with truck fumes, and (4) any windblown debris associated with trucks. These reductions in traffic headlight glow, noise and visibility impacts, however, are not anticipated to alter substantially the conclusions regarding wilderness-experience related nighttime lighting impacts and mitigation measures associated with the Proposed Action.

4.11.7.2 Mitigation

Mitigation would be the same as for the Proposed Action.

4.11.7.3 Significance After Mitigation

No new significant impacts are identified under this alternative.

4.11.8 Landfill on Kaiser Land Only Alternative

4.11.8.1 Impact

Construction of the landfill without the proposed land exchange between the BLM and Kaiser would limit landfill activities to approximately 289 acres, including the East Pit. This alternative would result in an approximately 80 percent reduction in the amount of area to be used for landfilling at the Project site. The resulting wilderness-experience related impacts of nighttime lighting, visibility, visual, and noise would be essentially identical to that described for the Proposed Action because, under both scenarios, landfill operations associated with waste transport and receiving would remain essentially the same.

4.11.8.2 Mitigation

Mitigation would be the same as for the Proposed Action.

4.11.8.3 Significance After Mitigation

No new significant impacts are identified under this alternative.

4.11.9 Landfill Development/No Townsite Development Alternative

4.11.9.1 Impacts

Under this alternative, no improvements would be made to the Townsite. This alternative would not alter the conclusions regarding nighttime lighting, visual, visibility, windblown debris, noise, or odor impacts and mitigation measures associated with the Proposed Action.

4.11.9.2 Mitigation

Mitigation measures would be the same as those associated with the Proposed Action.

4.11.9.3 Significance After Mitigation

No new significant impacts are identified under this alternative.

4.12 Utilities and Services

This section presents criteria of significance for utilities and services and evaluates the aspects of the Proposed Action that could pose the potential for significant adverse impacts to utilities and services, including: (1) water and sewer; (2) fire, police, and emergency services; (3) utility infrastructure (i.e., electrical, natural gas, telephone, television); and (4) community services.

4.12.1 Standards of Significance

Pursuant to Appendix G of the California Environmental Quality Act (CEQA) Guidelines, a project will normally have a significant effect on the environment if it interferes with emergency response plans or emergency evacuation plans. Appendix I of the CEQA Guidelines states that a project could have a significant effect if it results in the need for new or altered governmental services (e.g., fire protection, police protection, schools). In accordance with the guidelines provided by CEQA, the following standards of significance have been developed:

- **Water and Sewer.** Impacts to water and sewer services would be considered significant if existing facilities could not adequately serve the water and sewer requirements of the proposed Project, or if Project implementation were to result in any of the following conditions:

  - Need for additional facilities (e.g., infrastructure) or staff to maintain acceptable levels of service

  - Substantial degradation in the level of service for water and sewer provisions below established or acceptable levels

- **Fire, Police, and Emergency Medical Services.** Impacts to fire, police, and emergency medical service would be considered significant if fire, police, or emergency medical needs of the Project area could not be accommodated by existing services, or if Project implementation results in any of the following conditions:

  - Interference with existing or planned emergency response plans or emergency evacuation plans

  - Need for additional staffing or equipment to maintain acceptable service ratios, response times, or other performance objectives

  - Substantial degradation in the level of service of existing fire, police, and emergency medical services below established or acceptable levels

- **Utilities.** Implementation of the Proposed Action would have a significant impact on utilities if the utility needs of the area could not be adequately accommodated by existing services, or if the Project results in any of the following conditions:
  - Need for expansion of existing utility (e.g., electrical, natural gas, telephone, television) infrastructure or additional staff to maintain acceptable levels of service
  - Substantial degradation in the level of service for existing utilities below established or acceptable levels
- **Community Facilities.** The Proposed Action would result in significant impacts to community facilities (e.g., schools, libraries) if the needs of the area could not be adequately accommodated by existing services, or if Project implementation were to result in any of the following conditions:
  - Need for new, altered, or expanded staffing, equipment, or facilities not currently provided
  - Substantial degradation in the level of service for existing community facilities below established or acceptable levels

4.12.2 Water and Sewer

This section presents the potential impacts associated with water and sewer infrastructure of the landfill and the Townsite.

4.12.2.1 Proposed Action

Impacts. The water consumption and sewer services impacts are described below.

Water Consumption. Table 4.12-1 summarizes the estimated water use during construction of the Eagle Mountain Landfill. About 80 million gallons (245.5 acre-feet [ac-ft]) of water will be required for the initial construction of the landfill, which includes earth material construction, soil liners, dust control, road construction, and site improvements. The greatest amount of water (45 million gallons [mg]) will be consumed for dust control and moisture conditioning in the construction of the landfill liner. Construction of the Eagle Mountain Railroad improvements will consume about 11.7 mg, and the construction of Eagle Mountain Road about 10.7 mg.

Table 4.12-1
Total Initial Construction Water

Construction Area	Gallons
Earth Material Construction	12, 933,789
Low Permeable Soil Liner	1,044,254
Landfill Liner Dust Control/Moisture Conditioning	42,120,000
Eagle Mountain Railroad–Truck Haul	9,828,000
Eagle Mountain Railroad–Drainage	1,852,000
Eagle Mountain Road–Construction	1,085,480
Eagle Mountain Road–Dust Control	9,600,000
Site Improvements	1,260,000
Total Construction Water	**79,723,523**

Source: Morrison Knudsen Corporation, June 26, 1995.

Indirect impacts on water consumption would occur as a result of activities related to renovation of the Townsite. Construction activities at the Townsite are anticipated to require approximately 10 to 12 construction workers. Although the Townsite could accommodate these workers, this environmental impact statement/environmental impact report (EIS/EIR) assumes that these temporary workers are likely to be from outside the immediate Townsite-Desert Center area, and, therefore, are expected to have no impact on Townsite housing stock or utility demands. As noted in Section 2 of this EIS/EIR, operation of the landfill is expected to create a maximum of approximately 250 permanent onsite jobs. In addition, an estimated 100 temporary jobs will be positions associated with initial landfill construction.

For these short-term landfill construction employees, this EIS/EIR assumes that approximately 150 temporary positions would be created for 6 to 9 months. It is further assumed that these employees would commute primarily to the Project site from communities in the Eastern Coachella Valley and Blythe area. Because they would not reside in the Townsite, there would be no short-term impacts on water use associated with landfill employees.

Existing wells in the Chuckwalla Valley will provide this water. On the basis of the groundwater assessment conducted for this EIS/EIR (see Section 4.1 and Appendix C), the proposed Project's effect on the future groundwater supply is not considered to be a significant impact. The cumulative impact of this water consumption on the regional groundwater basin is discussed in Section 5.

During operations, the volume of water necessary to support the landfill operations is dependent upon the incoming waste disposal rate, the phase of development, and equipment and personnel requirements. Table 4.12-2 summarizes estimated water consumption during the maximum operations of the landfill (20,000 tons per day), which is estimated to be 348.6 mg per year. Including a 10 percent contingency factor, this represents about 1,070 acre feet of water per year. The previous EIS/EIR (BLM and County of Riverside, 1992) had estimated maximum annual consumption to be about 1,972 ac-ft per year. The amount of water consumed is less

than originally estimated primarily because of refinements in the liner design, paving of some roads, and the use of dust suppressants that have been included as part of the Proposed Action since the original EIS/EIR was certified in October 1992. The increased water usage is within the recoverable yields estimated for the area and, therefore, would not significantly impact groundwater resources (see Section 4.1).

Table 4.12-2
Maximum Year Operations Water Use

Operations	Gallons
Daily Cover	20,520,864
Landfill Dust Control	243,360,000
Landfill Liner Construction	71,318,293
Final Cover	3,702,874
Equipment	5,850,832
Personnel	3,868,800
TOTAL	**348,621,663**

Source: Morrison and Knudsen Corporation, June 26, 1995.

The water and sewer infrastructure for the Kaiser's previous mining activities at Eagle Mountain is available and has sufficient capacity to serve the larger population resulting from Project implementation. Water consumption within the Townsite would increase to approximately 154,560 gallons per day (assuming a daily consumption rate of 240 gallons per person based on a Coachella Water District estimate of 1 ac-ft per year per family).

Potable water is currently provided by tanker truck or in bottles. Additional water truck trips would be necessary to supply this water. Kaiser plans to develop a system in the future to provide a privately owned/operated community water system, which will provide potable water meeting state and federal health requirements. The specifics, performance requirements, and quality of potable water provided by this system, will be developed jointly through a negotiated agreement between Kaiser and the County of Riverside Department of Environmental Health.

Sewer Services. Approximately 27,000 gallons per day (gpd) are currently being used. An increase in sewage generation of approximately 39,120 gallons per day (assuming 240 gallons per unit per day) would result in sewage generation of 66,000 gpd, which would exceed the currently allowed (by permit) discharge rate of 35,000 gpd. The existing design capacity of the treatment facility (i.e., 270,000 gallons per day), however, is adequate to meet the projected demands. If the discharge of the facility exceeds its permitted level, approval must be obtained from the Lower Colorado River Regional Water Quality Control Board (RWQCB) to increase the discharge requirements for the facility. Because the proposed increase would not exceed design and operational capacity, no significant impacts would occur.

The quantity of condensate generated during the landfill gas (LFG) extraction process is a function of LFG and ambient temperatures, flow rates, recovery system design, and operating parameters. A range of 240 to 670 gallons of condensate generated per million cubic feet (at standard temperature and pressure) of LFG recovered is estimated (SCS Engineers, 1987). Assuming a maximum daily LFG generation rate of 66 million cubic feet per day (see Section 4.4), between 15,840 and 44,220 gallons of condensate could be generated on a daily basis. The condensate will be collected and transported by truck to a private or publicly owned treatment facility.

Mitigation. Liner design modifications have reduced the water demands estimated for the Project that were originally proposed in the previous EIS/EIR. (See Chapter 2 for a discussion of differences between the previously proposed project and the Project under review in this EIS/EIR.) No additional mitigation measures beyond those associated with existing design requirements are warranted or required.

Significance After Mitigation. Because potable water will be trucked in to meet domestic and business use, and construction and operational impacts will not adversely affect groundwater levels, direct and indirect water impacts due to the proposed Project would be below the level of significance. The mitigation measures incorporated into the proposed Project design reduce impacts to water and sewer services to below the level of significance.

4.12.2.2 No Action Alternative

Impacts. The No Action Alternative would preclude the occurrence of any potential impacts to water and sewer services associated with the Project.

Mitigation. No mitigation measures are required for this alternative.

Significance After Mitigation. The potential for impacts to water and sewer services would be reduced to below the level of significance.

4.12.2.3 Reduced Volume of Onsite Disposal Alternative

Impacts. The potential impacts under this alternative would be essentially identical to those of the Proposed Action. A reduction of waste disposed in the landfill would not substantially alter daily operations of the Project. Such a reduction would result in a major decrease in the number of employees needed to operate the landfill. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action. It would extend the life of landfilling operations by approximately 20 percent, or about 20 years.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into a reduced-scale Project design would reduce potential impacts to water and sewer services to below the level of significance.

4.12.2.4 Alternate Road Access Alternative

Impacts. The potential impacts under this alternative would be identical with those of the Proposed Action. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. Impacts would be reduced to below the level of significance.

4.12.2.5 Rail Access Only Alternative

Impacts. The potential for impacts under this alternative would be substantially the same as those of the Proposed Action.

Mitigation. Potential impacts would be reduced below the level of significance.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would result in a potential for impacts to water and sewer services, which is below the threshold of significance for this alternative.

4.12.2.6 Landfill on Kaiser Land Only Alternative

Impacts. The amount of water consumed for landfill construction and operations would be slightly reduced under this option. The expected life of the landfill would be reduced to about 39 years, depending on the rate at which waste is disposed. The maximum number of landfill employees would also be reduced to about 60 percent of the level in the proposed Project.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design reduce potential impacts to water and sewer services to below the level of significance.

4.12.2.7 Landfill Development/No Townsite Development Alternative

Impacts. Under this option, it is assumed that the landfill would be developed, but that essentially no improvements would be made to the Townsite. Employees working at the

landfill would not be able to live in the Townsite, and would reside in and commute from other local communities. The most likely communities to absorb the additional employment would be Lake Tamarisk, Desert Center, Blythe, Indio, and other eastern Coachella Valley communities. Based on the assumptions and analysis in the socioeconomics section (Section 3.8), virtually all of these jobs would be expected to be taken by existing residents from these areas. The number of new employees would represent an increase of approximately 250 persons, drawn from existing job pools in other communities. Because this represents no increase in demands for local services, and does not place substantial additional burdens to existing systems, no adverse impacts are anticipated.

Mitigation. No mitigation measures are required or warranted.

Significance After Mitigation. Because additional demands for services will not substantially affect or diminish utilities or services capacity, potential impacts are below the level of significance.

4.12.3 Fire, Police, and Emergency Medical Services

4.12.3.1 Proposed Action

Impacts. The previous EIS/EIR (BLM and County of Riverside 1992) stated that the Riverside County Sheriff's office anticipated no significant impact on the ability of the department to provide service to the area. The expected response time is estimated to remain the same as the existing condition. The number of calls, however, will increase with the increased population of the Townsite. Many of these calls are expected to be handled by local onsite security that Kaiser will provide.

The previous EIS/EIR (BLM and County of Riverside 1992) also stated that the County of Riverside Fire Department considered the existing fire protection at Eagle Mountain to be inadequate, based on the preliminary population increase estimates associated with the proposed Project at that time. Reactivation, full funding, and staffing of the Eagle Mountain fire station with County of Riverside personnel was a condition of approval for the proposed expansion of the community correctional facility. The previous EIS/EIR indicated that the County of Riverside Fire Department considered that even with full funding and staffing (2 persons, 24 hours per day, 7 days per week), the Eagle Mountain station would be inadequate to provide fire protection for the area after the proposed Project is operational. Additional improvements to the existing municipal water system and to the landfill site would be required to provide adequate capacity and flow for fire suppression.

Mitigation. Other than the mitigation measures cited above, no additional mitigation measures associated with police services are necessary. In the previous EIS/EIR, however, the County of Riverside Sheriff's Department suggested that the design of the Project incorporate site and equipment security by either fencing or maintaining private security personnel. The design for this proposed Project will incorporate fencing of the active use areas of the landfill and ensure only controlled, limited access to the site.

Additional fire protection personnel and equipment in excess of what is currently proposed for the community correctional facility is needed based on preliminary Townsite population growth estimates attributable to the Project. Because the population associated with the landfill would be served by the fire staffing requirements of an expansion of the community correctional facility, the Project would be required to contribute to the funding of the fire improvements. The following mitigation measures would reduce the fire protection impacts below the level of significance:

- The applicant shall submit detailed plot plans of each planning area for review/approval.
- Prior to the issuance of any use and/or building permits, the project proponents shall:
  - Obtain a written agreement for fire protection services from the Riverside County Fire Department
  - Submit a Fire/Life Safety and Emergency Response Plan to the fire department for review/approval
  - Install water mains and fire hydrants that provide the required fire flows pursuant to an improvement plan approved by the fire department
- Project proponents shall participate in the fire protection impact mitigation program as adopted by the County of Riverside Board of Supervisors.
- Clearance from the fire department shall be obtained prior to the reoccupancy of any existing dwelling units, buildings, or structures located within the Townsite and/or the proposed boundaries of the Project.

Significance After Mitigation. Impacts of the proposed Project on fire and police protection are considered not significant. The mitigation measures listed above would minimize potential impacts to fire protection services to below the level of significance.

4.12.3.2 No Action Alternative

Impacts. The No Action Alternative would preclude the occurrence of any potential impacts to police and fire protection and emergency services associated with the Project.

Mitigation. No mitigation measures are required for this alternative.

Significance After Mitigation. The potential for impacts to police and fire protection and emergency services would be below the level of significance.

4.12.3.3 Reduced Volume of Onsite Disposal Alternative

Impacts. The potential impacts under this alternative would be essentially identical to those of the Proposed Action. A change in landfill disposal rates would not substantially alter daily operations of the Project. Such a reduction would be unlikely to result in a major decrease in the number of employees needed to operate the landfill. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. Impacts of the reduced-scale Project on police protection are not considered to be significant. The mitigation measures listed for the Proposed Action would reduce potential impacts to fire protection services to below the level of significance.

4.12.3.4 Alternative Road Access Alternative

Impacts. The potential impacts under this alternative would be identical to those of the Proposed Action. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action because it would alter only the access road for delivery of waste to the landfill (i.e., it would not change the access of fire or police services to the Townsite).

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. Impacts of the project on police protection are not considered to be significant. The mitigation measures listed for the Proposed Action would reduce potential impacts to fire protection services to below the level of significance for this alternative.

4.12.3.5 Rail Access Only Alternative

Impacts. The potential for impacts under this alternative would be substantially the same as the Proposed Action because the different mode of transport of waste does not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. Impacts of the Project on police protection are considered not significant. The mitigation measures would reduce potential impacts to fire protection services to below the level of significance for this alternative.

4.12.3.6 Landfill on Kaiser Land Only Alternative

Impacts. The Landfill on Kaiser Land Only Alternative would require fewer employees, and therefore reduce the demands for services. Fire protection services would still need to be supplemented. The operating life of the landfill would likely be reduced to about 39 years; and, therefore, employment would also be reduced when the landfill closes. Although the land area subject to landfilling operations would be reduced, the impacts from this alternative would be essentially the same as the proposed Project, but would conclude after approximately 39 years when the capacity is reached.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. Impacts of the Project on police protection are not considered to be significant. The mitigation measures listed for the Proposed Action would reduce potential impacts to fire protection services to below the threshold of significance for this alternative.

4.12.3.7 Landfill Development/No Townsite Development Alternative

Impacts. With no Townsite development, employees would reside in and commute from nearby communities such as Desert Center, Lake Tamarisk, Blythe, Indio, and eastern Coachella Valley communities. Although landfill employees would have to commute to the site (see Section 4.3, Traffic and Transportation), this alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action because eliminating improvements to the Townsite does not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. No mitigation measures are required for this alternative.

Significance After Mitigation. Potential impacts would be reduced to below the level of significance.

4.12.4 Utilities

4.12.4.1 Proposed Action

Impacts. Southern California Edison (SCE, 1995a) and Southern California Gas Company (SCGC, 1995b and 1995c) personnel have indicated that both utilities have sufficient infrastructure and capacity, and would be able to serve the landfill and the Townsite. Telephone and cable television service infrastructure exists at the Townsite and the surrounding communities, and can also accommodate expected increased service demands.

Mitigation. No additional mitigation measures beyond those associated with existing requirements and aspects of the proposed Project are necessary or warranted.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce potential impacts to below the level of significance.

4.12.4.2 No Action Alternative

Impacts. The No Action Alternative would preclude the occurrence of any potential impacts to utility services associated with the Project.

Mitigation. No mitigation measures are required for this alternative.

Significance After Mitigation. The potential for impacts to utility services would be considered not significant.

4.12.4.3 Reduced Volume of Onsite Disposal Alternative

Impacts. The potential impacts under this alternative would be similar to, although somewhat less than, those of the Proposed Action. This 16,000-ton-per-day (tpd) alternative comprises rail shipments of 14,000 tpd and truck hauling of 2,000 tpd, resulting in an approximate 22 percent reduction in transfer truck and unit train capacities per day. Electrical usage is reduced under this alternative due to an approximate 25 percent lower power requirement for the LFG flare stations.

A change in landfill volume/configuration would not substantially alter daily operations of the Project. Such a reduction would, however, result in a decrease in electrical energy consumption and potential impacts on utilities. Consequently, this alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into a reduced-scale Project design would minimize impacts to below the level of significance.

4.12.4.4 Alternate Road Access Alternative

Impacts. The potential impacts under this alternative would be identical to those of the Proposed Action. Although this alternative increases distance traveled by truck rigs to the landfill, other utility-related aspects of this alternative would be identical to the proposed Project. Consequently, this alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce impacts to below the level of significance.

4.12.4.5 Rail Access Only Alternative

Impacts. The Rail Access Only Alternative results in an 18,000-tpd operation. Operations at the landfill also would be reduced in proportion to the approximately 10 percent lower refuse tonnage received daily. Electrical usage under this alternative is also less because there is no truck entrance facility, and LFG flare station operations are reduced.

The potential impacts under this alternative would be essentially identical, albeit somewhat lessened, relative to those of the Proposed Action. A change in landfill volume/configuration would not substantially alter daily operations of the Project. Such a reduction would, however, result in a slight decrease in electrical energy consumption over the lifetime of the landfill. Consequently, this alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design reduce impacts to below the level of significance.

4.12.4.6 Landfill on Kaiser Land Only Alternative

Impacts. The potential impacts under this alternative would be identical to those of the Proposed Action. Because the landfill footprint will be reduced to approximately 289 acres, it is assumed that only one LFG flare station will be used, instead of the four stations planned under the Proposed Action, resulting in a subsequent lessening of potential utility impacts. The life of the landfill will be shortened, resulting in the potential to reach full capacity within approximately 39 years. A change in landfill volume/configuration would not alter daily operations of the Project. Such a reduction would likely result in a decrease of approximately 60 percent of the number of employees needed to operate the landfill.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce impacts to below the level of significance.

4.12.4.7 Landfill Development/No Townsite Development Alternative

Impacts. The Landfill Development/No Townsite Alternative would preclude the potential for utility impacts associated with an increase in population at the Eagle Mountain Townsite.

Elimination of further renovation of the Townsite would not alter daily operations of the Project, and would be unlikely to result in a major decrease in the number of employees needed to operate the landfill. Electrical energy consumption (and subsequent potential impact on utilities), however, is estimated to be reduced by about 5 gigawatt hours (gWhrs) per year below that associated with the proposed Project. Consequently, this alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the proposed project design would reduce impacts to below the level of significance.

4.12.5 Community Facilities

4.12.5.1 Proposed Action

Impacts. The anticipated population increase from the Proposed Action would result in additional users of the existing library and recreation facilities at Lake Tamarisk. These facilities are currently underutilized, and are deemed adequate to accommodate the proposed landfill and Townsite development and the attendant population growth.

The projected population from the landfill and Townsite development are expected to add a maximum of up to 900 new residents. A total of 250 new residents would be full-time landfill employees. Of the remaining 650 residents, approximately one-half, or 325, are assumed to be elementary school-aged children. The existing school at Eagle Mountain is substantially underutilized (existing attendance is 68 versus the capacity of 500), and would be able to accommodate the influx in school-aged children. Adverse impacts to school services within the Desert Center Unified School District are, therefore, not anticipated.

Mitigation. No additional mitigation measures beyond those associated with existing requirements and aspects of the proposed Project appear necessary or warranted.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project reduce the impacts to below the level of significance.

4.12.5.2 No Action Alternative

Impacts. The No Action Alternative would preclude the occurrence of any potential impacts to community facilities associated with the Project.

Mitigation. No mitigation measures are required for this alternative.

Significance After Mitigation. The potential for impacts to community facilities is not significant for this alternative.

4.12.5.3 Reduced Onsite Disposal Alternative

Impacts. The potential impacts under this alternative would be essentially identical to those of the Proposed Action. A reduction in waste disposal would not substantially alter daily operations of the Project. Such a reduction would be unlikely to result in a major decrease in the number of employees needed to operate the landfill. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into a reduced-scale Project design reduce the impacts to below the level of significance.

4.12.5.4 Alternate Road Access Alternative

Impacts. The potential impacts under this alternative would be identical with those of the Proposed Action. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce impacts to the level of insignificance.

4.12.5.5 Rail Access Only Alternative

Impacts. The potential for impacts under this alternative would be identical with those of the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. Potential impacts would be reduced to below the level of significance.

4.12.5.6 Landfill on Kaiser Land Only Alternative

Impacts. Because there would be a slight reduction in the number of employees, the Landfill on Kaiser Land Only Alternative would have slightly reduced demands on community facilities compared to the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. Impacts would be reduced to the level of insignificance.

4.12.5.7 Landfill Development/No Townsite Development Alternative

Impacts. The Landfill Development/No Townsite Alternative would preclude the potential for community facility impacts associated with an increase in population at the Eagle Mountain Townsite. Elimination of further development of the Townsite would not alter daily operations of the Project, and would be unlikely to result in a major decrease in the number of employees needed to operate the landfill. Consequently, this alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would result in a potential for community facility-related impacts that is below the threshold of significance for this alternative.

4.12.6 Solid Waste Disposal

The Proposed Action will eliminate the need for the continued operation of the Desert Center Landfill on Kaiser Road. Waste from the local desert area communities would be transported to the site by truck and rail. The long-term effects of closing the landfill on Kaiser Road and other County landfills would be to reduce or eliminate impacts at those facilities.

4.13 Noise

This section presents the standards used to measure the significance of noise impacts and the potential impacts of different types of noise-generating activities associated with the Project (i.e., rail, vehicular, and landfill construction and operation). Within each subsection, impacts of the proposed action and alternatives to the proposed action are evaluated. All noise levels are assessed assuming full build-out conditions. Additional information is in Appendix J.

4.13.1 Standards of Significance

Neither NEPA nor CEQA addresses significance standards for noise impacts. The County of Riverside Noise Element of the General Plan, however, has established guidelines for land use compatibility and community noise environments based on Community Noise Equivalent Levels (CNEL) (see Section 3.13).

4.13.1.1 Rail and Vehicular Traffic

The County of Riverside guidelines define four noise exposure categories that are applied to the site of proposed construction: (1) Acceptable; (2) Normally Acceptable; (3) Normally Unacceptable; and (4) Unacceptable. Project-generated noise levels associated with traffic and railroad activity are evaluated on the basis of the CNEL guidelines, which are shown in Figure 3.13-1.

- An impact attributable to the Project is considered significant if noise levels exceed a CNEL value of 65 dBA at residential dwellings or 70 dBA at commercial structures.

4.13.1.2 Landfill Operations and Landfill Construction

Noise from stationary sources are also regulated by the County of Riverside. Landfill operations and construction are assessed according to these standards.

- An impact attributable to the Project is considered significant if noise levels exceed 65 dBA during daytime (7 A.M. to 10 P.M.) hours and 45 dBA during nighttime (10 P.M. to 7 A.M.) hours as projected to any portion of a lot with an occupied residence.

4.13.1.3 Joshua Tree National Park Wilderness Area

Although there are no applicable noise level standards for national parks or wilderness areas, a standard of significance has been developed in the EIR/EIS for the wilderness areas of JTNP in the proximity of the proposed Project site, on the basis of experience with noise impacts and analysis and professional judgment. The standard is based on potential noise impacts on the wilderness areas of JTNP. The nonwilderness areas of JTNP closest to the

Project site are the eastern foothills of the Eagle Mountains, and the closest wilderness areas abut the nonwilderness areas to the west in the Eagle Mountains. The significance criteria for JTNP emphasize the wilderness areas because the nonwilderness areas contain existing infrastructure, such as the MWD aqueduct and transmission lines, and therefore, are not representative of wilderness conditions. Figure 3.5-3 (Section 3.11) shows the DOI boundaries of the Eagle Mountain wilderness and nonwilderness areas that were prepared in support of the California Desert Protection Act.

This following standard of significance takes into account the average hourly noise levels for long-term noise impacts associated with the Project.

- Project-related noise impacts are considered significant if they result in an average hourly increase of more than 3 dBA (CNEL or L_{eg}) above existing conditions in the wilderness area of JTNP. This criterion was selected because 3 dBA is the level below which increases in noise levels are not perceptible to humans.

4.13.2 Rail

Noise levels associated with existing rail transportation activity were assessed along the Southern Pacific Railroad track from Ferrum Junction and along the Eagle Mountain Railroad to the Project site. As stated in Section 3.13, existing noise levels along the Southern Pacific Railroad line exceed the 65 dBA CNEL noise impact criteria at distances from the track centerline to 250 feet. The Eagle Mountain Railroad that extends to the Project site is not in use at this time. Existing noise levels along the Eagle Mountain Railroad range between 26 and 41 dBA-L_{eq} based on measurements. Where the Eagle Mountain Railroad passes under Interstate 10, existing noise levels are dominated by traffic on the interstate. Where the railroad intersects the Southern Pacific Transportation Railroad line in Ferrum, existing noise levels are dominated by industrial and rail related activity. Noise level impacts associated with Project-generated rail traffic are discussed below.

4.13.2.1 Proposed Action

Impacts

Under the Proposed Action, Project-generated rail traffic would increase the existing noise levels along the Southern Pacific Railroad line and along the Eagle Mountain Railroad.

Rail Traffic on Southern Pacific Railroad. Under the Proposed Action, noise levels are expected to increase along the Southern Pacific Railroad from southern California to Ferrum junction as a result of Project-generated rail activity. Trains on the Southern Pacific Railroad track delivering waste to the Project Site would travel at approximately 50 miles per hour (mph). Overall increases in rail traffic noise along the Southern Pacific Railroad attributable to the Project are shown in Table 4.13-1.

Table 4.13-1
Noise Level Comparison of Existing and Predicted Project-Generated Rail Traffic along the Southern Pacific Railroad (dBA-CNEL, Assuming Train Travel at 50 mph)

Modeling Conditions	Distance from Track Centerline (feet)			
	100	200	400	800
Existing Conditions (see Section 3.13) (dBA)	74	70	64	58
Future with Proposed Project (dBA)	75	71	65	59
Increase in Rail Noise Levels (dBA)	1	1	1	1

A minimal noise level increase would occur along the Southern Pacific Railroad line where a relatively high number of trains currently operate. The addition of Project-generated rail traffic would increase noise levels by 1 dBA along the Southern Pacific Railroad line. For the residential areas located within a distance of 400 feet that have a direct line-of-site to the tracks the noise levels would be above the County of Riverside's noise level standard of 65 dBA-CNEL. Because noise levels currently exceed the County of Riverside CNEL standards and because noise level increases of 1 dBA are not perceptible to the average person, no significant Project-related rail noise impacts are expected along the Southern Pacific Railroad line, including Coachella and other residential areas along the valley.

Rail Traffic on Eagle Mountain Railroad. Rail traffic to the proposed Project site could consist of a maximum of 5 train loads per day during peak operations, for a total of 12 train trips per day on the Eagle Mountain Railroad to and from the Project site. Rail noise levels along the Eagle Mountain Railroad were modeled based on train speeds of 50 mph in areas with level or down hill grades. As the trains approach the Project site, speeds would be reduced to between 10 and 20 mph, and to 5 mph or below as they approach Rail Yard I or II. The average train is expected to consist of four locomotives and a maximum of 85 cars. Each car would carry two containers. Train travel to the Project site would occur primarily during daytime hours, with one train during evening hours, and one train during nighttime hours. Table 4.13-2 contains the noise levels for trains traveling to and from the Project site at speeds of 50, 20, and 10 mph at four distances from the Eagle Mountain Railroad centerline.

Table 4.13-2
Predicted Rail Noise Levels Along Eagle Mountain Railroad (dBA-CNEL)

Train Speed (mph)	Distance from Eagle Mountain Railroad Centerline (feet)			
	100	200	400	800
50	68	64	58	52
20	68	64	58	52
10	69	65	59	53

As the trains approach the Project site, the lower speed would result in a slight increase in the CNEL due to the extended time the train remains in the area. For noise sensitive receivers located within 200 feet of the Eagle Mountain Railroad, noise levels could exceed the County of Riverside 65 dBA CNEL criteria. The receivers nearest the Eagle Mountain Railroad (R9, which is directly south of the Townsite, and R32, at the correctional facility) are located approximately 200 feet from the existing Eagle Mountain Railroad. (These and other receiver locations are shown in Figure 4.13-1). All other sensitive receivers within the Townsite are at greater distances from the existing Eagle Mountain Railroad and many would also be shielded from the rail noise by houses that block the direct line-of-sight to the Eagle Mountain Railroad. The proposed rail spur to Rail Yard II is approximately 8,000 feet from the nearest noise sensitive receiver at the Townsite.

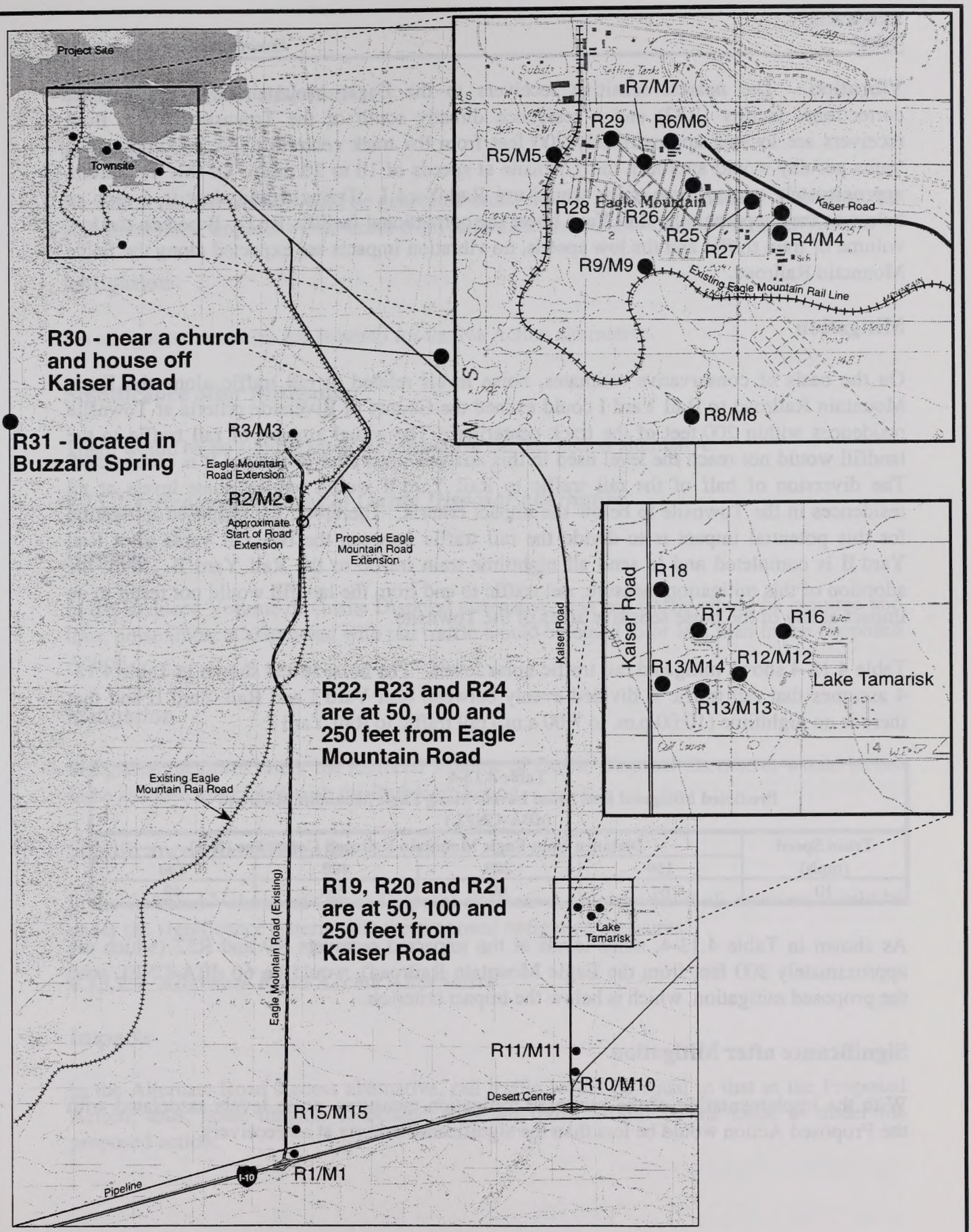
Noise levels at JTNP from train activities are expected to increase by an imperceptible amount near the JTNP borders within 6,000 feet of the Eagle Mountain Railroad. Train operations would be near the east park boundary (a nonwilderness area approximately 6,000 feet distant at the nearest point) during the last 5 miles of the trip along the existing track alignment. Train speeds are expected to be between 10 and 20 miles per hour, resulting in noise levels of approximately 40 dBA CNEL at 6,000 feet, which is a noise level increase of approximately 1 dBA at the JTNP nonwilderness boundary. The train-related noise level at the JTNP wilderness boundary (R31) is calculated to be 30 dBA CNEL at the point nearest the Eagle Mountain Railroad (approximately 3 miles). The existing noise at the wilderness boundary was measured to be approximately 39 dBA CNEL. Noise levels are expected to increase by approximately 1 dBA, which is below the significance standard for the JTNP wilderness area.

Ancillary Facilities. Other noise level increases associated with train activity include rail yard operations, which generally include track improvements, switcher engine operations, car coupling and uncoupling, idling locomotives, and rail car and locomotive maintenance. Although no extensive rail maintenance activities are planned for the Project site, periodic maintenance would be necessary. The Project site is equipped with a rail maintenance site located near Rail Yard I. Noise levels at distances of 100, 250, and 1,000 feet from the yard operations expected at the Project site are given in Table 4.13-3. The calculated maximum noise level associated with rail yard activity as calculated at the nearest JTNP wilderness boundary, to the south, is 34 dBA. This level is below the existing conditions (39 dBA) at the wilderness boundary (receiver site R31). At the JTNP nonwilderness boundary the calculated noise level is 42 dBA, which represents a slight increase.

Table 4.13-3
Maximum Noise Levels from Rail Yard Operations

Activity	Maximum Noise Levels (dBA)		
	100 feet	250 feet	1,000 feet
Car Coupling Impacts	90	82	70
Idling Locomotive	78	69	57
General Locomotive Maintenance	79	71	58
General Track Maintenance	79	71	58

Source: Wyle Laboratories Report WCR 73-5



R = Receiver Location
M = Monitoring Location

Figure 4.13-1
Noise Monitoring and Receiver Locations
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 noise3 6/96

Vibration. The nearest sensitive receivers to the Eagle Mountain Railroad are the correctional facility (R32) and a residence directly south of the Townsite (R9). Both receivers are located approximately 200 feet from the track centerline. A maximum of 5 trains per day would approach the Townsite at speeds of 10 to 20 mph. Of this maximum, approximately two to three trains would use Rail Yard I. Trains would slow to 5 mph or below as they approach the Rail Yard I near the correctional facility (R32). Based on the low volume of train traffic and the low speeds, no vibration impacts are expected along the Eagle Mountain Railroad.

Mitigation

On the basis of conservative estimates, noise levels related to rail traffic along the Eagle Mountain Railroad to Rail Yard I could exceed the County of Riverside criteria at Townsite residences within 200 feet of the track centerline. The actual amount of rail traffic to the landfill would not reach the level used in this analysis until after Rail Yard II is constructed. The diversion of half of the rail traffic to Rail Yard II would reduce noise levels at all residences in the Townsite to below the impact criteria. Therefore, the proposed mitigation for this potential impact is to divide the rail traffic between the two rail yards after Rail Yard II is completed and to send all nighttime train traffic to the Rail Yard II. With the adoption of this mitigation measure, rail traffic to and from the landfill would not result in an impact at any of the noise sensitive areas of the Townsite.

Table 4.13-4 shows mitigated rail traffic noise levels. The noise levels shown in Table 4.13-4 assumes that rail traffic is divided evenly between Rail Yard I and Rail Yard II and that there is no nighttime (10:00 p.m. to 7:00 a.m.) rail traffic to Rail Yard I.

Table 4.13-4
Predicted Mitigated Rail Noise Levels Along Eagle Mountain Railroad
(dBA-CNEL)

Train Speed (mph)	Distance from Eagle Mountain Railroad Centerline (feet)			
	100	200	400	800
10	64	60	55	49

As shown in Table 4.13-4, noise levels at the impacted receivers R9 and R32 (which are approximately 200 feet from the Eagle Mountain Railroad), would be 60 dBA-CNEL with the proposed mitigation, which is below the impact criterion.

Significance after Mitigation

With the implementation of the proposed mitigation measures, noise levels associated with the Proposed Action would be less than the significance criteria at all receivers.

4.13.2.2 No Action Alternative

Impacts

No additional rail traffic would be generated under the No Action alternative. Therefore, no additional noise impacts would occur from rail traffic associated with the Proposed Action.

Mitigation

No mitigation measures are required for the No Action alternative.

Significance after Mitigation

There would be no significant noise impacts in the No Action alternative.

4.13.2.3 Reduced Volume of Onsite Disposal Alternative

Impacts

In the Reduced Volume of Onsite Disposal alternative, less rail traffic would be required and thus, noise impacts associated with rail traffic would be equal to or less than in the Proposed Action.

Mitigation

Mitigation measures under the Reduced Volume of Onsite Disposal alternative would be the same as those associated with the Proposed Action.

Significance after Mitigation

In the Reduced Volume of Onsite Disposal alternative, noise levels at all receivers would be under the significance criteria with the proposed mitigation measures.

4.13.2.4 Alternate Road Access Alternative

Impacts

In the Alternate Road Access alternative, rail traffic would be equal to that in the Proposed Action; thus, noise impacts associated with rail traffic would be the same as under the proposed action.

Mitigation

Mitigation measures under the Alternate Road Access alternative would be the same as those associated with the Proposed Action.

Significance after Mitigation

In the Alternate Road Access alternative, noise levels at all receivers would be under the significance criteria with the proposed mitigation measures.

4.13.2.5 Rail Access Only Alternative

Impacts

In the Rail Access Only alternative, rail traffic would be equal to that in the proposed action thus, noise impacts associated with rail traffic would be the same as under the Proposed Action.

Mitigation

Mitigation measures under Rail Access Only alternative would be the same as those associated with the Proposed Action.

Significance after Mitigation

In the Rail Access Only alternative, noise levels at all receivers would be under the significance criteria with the proposed mitigation measures.

4.13.2.6 Landfill on Kaiser Land Only Alternative

Impacts

Noise impacts associated with rail traffic under the Landfill on Kaiser Land Only alternative would be less than under the proposed action because there would only be three trains per day.

Mitigation

In this alternative, mitigation measures would be the same as in the Proposed Action.

Significance after Mitigation

In the Landfill on Kaiser Land Only alternative, noise levels at all receivers would be under the significance criteria with the proposed mitigation measures.

4.13.2.7 Landfill Development/No Townsite Development Alternative

Impacts

In the Landfill Development/No Townsite Development alternative, rail traffic would be equal to that in the proposed action thus, noise impacts associated with rail traffic would be the same as under the Proposed Action.

Mitigation

In the Landfill Development/No Townsite Development alternative mitigation measures would be the same as in the Proposed Action.

Significance after Mitigation

In the Landfill Development/No Townsite Development alternative, noise levels at all receivers would be under the significance criteria with the proposed mitigation measures.

4.13.3 Vehicle

4.13.3.1 Proposed Action

Impacts

Under the Proposed Action, transfer trailers would gain access to the Project site using Eagle Mountain Road as extended and the last two miles of Kaiser Road. After reaching the Townsite, the transfer trailers would be directed toward one of the two container handling areas (Rail Yard I or Rail Yard II), depending on the phase of operation. Other vehicles gaining access to the Project site, such as worker- and light-duty vehicles, would use Kaiser Road. Noise levels were estimated, as described in Section 3.13, for the future traffic noise conditions based on the projected traffic routes and volumes described in Section 4.3. Table 4.13-5 shows the projected traffic noise levels at each receiver location for the proposed Project. The table lists for comparison: (1) the existing traffic noise levels, (2) the future projections for the No Action alternative noise levels, and (3) the County of Riverside CNEL criteria. Receiver locations are shown in Figure 4.13-1.

Vehicle-related noise level increases from Project-generated traffic would range from 3 to 5 dBA CNEL at the Townsite. Two commercial locations (R6 and R10) would exceed the County of Riverside standards. Receiver R6 is in the Townsite along Kaiser Road. Vehicle-related noise levels at this locale are expected to increase by 4 dBA over existing conditions, to 73 dBA CNEL, which exceeds the 70 dBA CNEL standard by 3 dBA. Receiver R10 is located in Desert Center at the intersection of Kaiser Road and Highway 177. Vehicle-related noise levels at R10 are expected to increase by 1 dBA over existing condition to 71 dBA, which exceeds the 70 dBA CNEL standard by 1 dBA.

Table 4.13-5
Noise Level Comparison of Vehicular Traffic for the Existing Conditions, the No Action Alternative, and the Proposed Action without Mitigation (dBA-CNEL)

Modeling Location	Existing Conditions	Future No Action Conditions	Proposed Action (PA)	Increase (PA minus Existing Conditions)	County of Riverside CNEL Guideline
Eagle Mountain Townsite Receivers					
R4	44	47	48	4	70
R5	50	52	53	3	70
R6	69	71	73	4	70
R7	53	55	57	4	65
R9	45	47	49	4	65
R25	59	61	63	4	65
R26	55	57	58	3	65
R27	61	63	64	3	65
R28	45	47	48	3	65
R29	57	59	60	3	70
R32	53	55	58	5	65
Lake Tamarisk Receivers					
R12	54	55	56	2	65
R13	55	55	56	1	65
R14	60	62	63	3	70
R16	53	53	54	1	65
R17	55	56	57	2	65
R18	58	60	61	3	70
Joshua Tree National Park (R8/M8) and Wilderness Area (R31)					
R8	39	39	44	5	N/A[1]
R31	39	39	40	1	N/A[1]
Pump Station Receivers					
R2	50	50	56	6	70
R3	36	35	40	4	70
Eagle Mountain Road (50, 100, 250 feet from centerline)					
R22	61	61	68	7	70
R23	58	58	65	7	70
R24	55	55	62	7	70
Eagle Mountain Road (Near Interstate 10)					
R1	73	73	76	3	N/A[2]
R15	70	70	74	4	N/A[2]
Kaiser Road (50, 100, 250 feet from centerline)					
R19	64	67	68	4	70
R20	62	64	65	3	70
R21	58	60	61	3	70
Kaiser Road (Near Interstate 10)					
R10	70	70	71	1	70
R11	66	67	68	2	N/A[2]
Residential/Church South of Eagle Mountain Townsite					
R30	57	59	60	3	70

[1] There are no CNEL guidelines for national parks or designated wilderness areas. For the purposes of this EIS/EIR, however, 3 dBA has been established as the allowable change from existing conditions for designated wilderness areas of JTNP (R31).
[2] There are no CNEL guidelines for undeveloped lands.

Noise levels from vehicles could increase by up to 3 dBA at Lake Tamarisk in the proposed action. Projected noise levels would range from 63 dBA CNEL near Kaiser Road (golf course) to 54 dBA CNEL within the Lake Tamarisk residential area. No receivers within Lake Tamarisk are expected to experience noise levels that exceed the CNEL ordinance standards. In general, traffic noise level increases along Eagle Mountain Road and Kaiser Road would increase over existing noise level conditions but would remain below the CNEL guideline. Noise levels near the intersection of Interstate 10 and Kaiser Road would increase by 1 to 2 dBA CNEL.

Project-related traffic noise is expected to increase the noise levels at the JTNP eastern boundary (R8), which is the boundary nearest the Eagle Mountain Road, by approximately 5 dBA. Noise levels at the wilderness boundary are expected to increase by 1 dBA, which is a level of increase generally indiscernible to the human ear. Therefore, there would be no significant impact to the JTNP wilderness area.

Mitigation

In the Townsite, noise impacts could be reduced by diverting or reducing traffic along Kaiser Road to Container Handling Yard II. In addition, restricting the flow of nighttime (10:00 p.m. to 7:00 a.m.) truck traffic along Kaiser Road near the Townsite would sufficiently reduce the noise levels at all the receivers in the area to below the County of Riverside standards. Heavy truck traffic to the landfill would need to be prohibited or reduced during nighttime hours until Container Handling Yard II is completed. After the Container Handling Yard II is complete, the nighttime heavy truck traffic could use this area for unloading waste containers, which would avoid truck travel adjacent to the Townsite and reduce noise levels at all Townsite receivers to below the level of significance. Although there is no significant impact to the wilderness area of JTNP, these mitigation measures would also reduce noise levels at other receivers, including the JTNP boundary.

Table 4.13-6 shows the mitigated traffic noise levels at each receiver location for the proposed Project. The table lists for comparison the existing traffic noise levels and the County of Riverside CNEL criteria.

As shown in Table 4.13-6, noise levels at receiver R6 will no longer be impacted with the proposed vehicular traffic mitigation measures.

Significance after Mitigation

With the implementation of the proposed mitigation measures, noise levels at receivers in the Townsite would be below the level of significance.

Table 4.13-6
Noise Level Comparison of Vehicular Traffic for the Existing Conditions and the Proposed Action with Mitigation (dBA-CNEL)

Modeling Location	Existing Conditions	Proposed Action (PA) with Mitigation	Increase (PA minus Existing Conditions)	County of Riverside CNEL Guideline
Eagle Mountain Townsite Receivers				
R4	44	44	0	70
R5	50	50	0	70
R6	69	69	0	70
R7	53	53	0	65
R9	45	45	0	65
R25	59	59	0	65
R26	55	55	0	65
R27	61	61	0	65
R28	45	45	0	65
R29	57	57	0	70
R32	53	53	0	65
Lake Tamarisk Receivers				
R12	54	56	2	65
R13	55	56	1	65
R14	60	63	3	70
R16	53	54	1	65
R17	55	57	3	65
R18	58	61	3	70
Joshua Tree National Park (R8/M8) and Wilderness Area (R31)				
R8	39	44	0	N/A[1]
R31	39	40	0	N/A[1]
Pump Station Receivers				
R2	50	56	6	70
R3	36	40	4	70
Eagle Mountain Road (50, 100, 250 feet from centerline)				
R22	61	68	7	70
R23	58	65	7	70
R24	55	62	7	70
Eagle Mountain Road (Near Interstate 10)				
R1	73	76	3	N/A[2]
R15	70	74	4	N/A[2]
Kaiser Road (50, 100, 250 feet from centerline)				
R19	64	68	4	70
R20	62	65	3	70
R21	58	61	3	70
Kaiser Road (Near Interstate 10)				
R10	70	71	1	70
R11	66	68	2	N/A[2]
Residential/Church South of Eagle Mountain Townsite				
R30	57	60	3	70

[1] There are no CNEL guidelines for national parks or designated wilderness areas. For the purposes of this EIS/EIR, however, 3 dBA has been established as the allowable change from existing conditions for designated wilderness areas of JTNP (R31).
[2] There are no CNEL guidelines for undeveloped lands.

4.13.3.2 No Action Alternative

Impacts

Under the No Action alternative, traffic noise levels in the area would increase over time by 1 to 2 dBA above the existing conditions. The slight increase is not uncommon for areas with minimal growth. The future noise levels without the proposed Project are given in Table 4.13-5.

Mitigation

No mitigation measures are required for the No Action alternative.

Significance after Mitigation

No significant noise impacts would occur under the No Action alternative.

4.13.3.3 Reduced Volume of Onsite Disposal Alternative

Impacts

Under the Reduced Volume of Onsite Disposal alternative, vehicular traffic levels are expected to be equal to levels in the proposed Project. Therefore, the traffic noise impacts are expected to be similar to the proposed Project.

Mitigation

In the Reduced Volume of Onsite Disposal alternative, mitigation measures would be the same as in the Proposed Action.

Significance after Mitigation

In the Reduced Volume of Onsite Disposal alternative, noise levels at receivers in the Townsite would be below the level of significance.

4.13.3.4 Alternate Road Access Alternative

Impacts

Table 4.13-7 shows the estimated future traffic noise levels at each receiver location under the Alternate Road Access alternative. The existing traffic noise levels, future No Action alternative noise levels, and the CNEL criteria are listed for comparison.

Under the Alternate Road Access alternative, all Project related traffic would use Kaiser Road as the primary access to the Project site. The noise level impacts at the Townsite would be identical to the impacts under the proposed Project because traffic levels along Kaiser Road near the Townsite are expected to be the same as under the propose Project.

Noise levels at Lake Tamarisk would increase 2 to 5 dBA CNEL over existing conditions. Noise levels would not exceed the County of Riverside CNEL ordinance standard at any of the receiver locations at Lake Tamarisk.

Noise levels at JTNP (R8 and R31) are not expected to increase over existing conditions.

Mitigation

Mitigation measures under the Alternative Road Access alternative would be the same as those associated with the Proposed Action.

Significance after Mitigation

In the Alternate Road Access alternative, noise levels at receivers in the Townsite would be below the level of significance.

4.13.3.5 Rail Access Only Alternative

Impacts

In the Rail Access Only alternative, noise levels along Eagle Mountain Road are not expected to increase due to the Project. Traffic noise level increases along Kaiser Road would be similar to those predicted for the proposed Project because Kaiser Road would remain the primary access road used by light-duty vehicles. Noise level impacts are expected to be the same as under the proposed Project.

Mitigation

Mitigation measures under the proposed action with Rail Access Only alternative would be the same as those associated with the Proposed Action.

Significance after Mitigation

In the Rail Access Only alternative, noise levels at receivers in the Townsite would be below the level of significance.

Table 4.13-7
Noise Level Comparison of Vehicular Traffic for the Existing Conditions, the No Action Alternative, and the Alternate Access Road Alternative without Mitigation (dBA-CNEL)

Modeling Location	Existing Conditions	Future No-Action Conditions	Alternate Access Road (AA)	Increase (AA minus Existing)	County of Riverside CNEL Guideline
Eagle Mountain Townsite Receivers					
R4	44	47	48	4	70
R5	50	52	53	3	70
R6	69	71	73	4	70
R7	53	55	57	4	65
R9	45	47	49	4	65
R25	59	61	63	4	65
R26	55	57	58	3	65
R27	61	63	64	3	65
R28	45	47	48	3	65
R29	57	59	60	3	70
R32	53	55	56	3	65
Lake Tamarisk Receivers					
R12	54	55	57	3	65
R13	55	55	58	3	65
R14	60	62	65	5	70
R16	53	53	55	2	65
R17	55	56	59	4	65
R18	58	60	64	6	70
Joshua Tree National Park (R8/M8) and Joshua Tree National Wilderness Area (R31)					
R8	39	39	39	5	N/A[1]
R31	39	39	39	1	N/A[1]
Pump Station Receivers					
R2	50	50	51	1	70
R3	36	35	38	2	70
Eagle Mountain Road (50, 100, 250 feet from centerline)					
R22	61	61	61	0	70
R23	58	58	58	0	70
R24	55	55	56	1	70
Eagle Mountain Road (Near Interstate 10)					
R1	73	73	74	1	N/A[2]
R15	70	70	70	0	N/A[2]
Kaiser Road (50, 100, 250 feet from centerline)					
R19	64	67	71	7	70
R20	62	64	68	6	70
R21	58	60	64	6	70
Kaiser Road (Near Interstate 10)					
R10	70	70	72	2	70
R11	66	67	69	3	N/A[2]
Residential/Church South of Eagle Mountain Townsite					
R30	57	59	63	6	70

(N/A) [1] There are no CNEL guidelines for national parks or designated wilderness. For the purposes of this EIS/EIR, however, 3 dBA has been established as the allowable change from existing conditions for designated wilderness areas of JTNP (R31).
(N/A) [2] There are no CNEL guidelines for undeveloped lands.

4.13.3.6 Landfill on Kaiser Land Only Alternative

Impacts

In the Landfill on Kaiser Land Only Alternative, vehicular traffic levels are expected to be equal to levels in the proposed Project. Therefore, the traffic noise impacts are expected to be similar to the proposed Project.

Mitigation

Mitigation measures under the Landfill on Kaiser Land Only alternative would be the same as in the Proposed Action.

Significance after Mitigation

In the Landfill on Kaiser Land Only alternative, noise levels at receivers in the Townsite would be below the level of significance.

4.13.3.7 Landfill Development/No Townsite Development Alternative

Impacts

Under the Landfill Development/No Townsite Development Alternative, vehicular traffic levels are expected to be equal to levels in the proposed Project. Therefore, the traffic noise impacts are expected to be similar to the proposed Project.

Mitigation

Mitigation measures under the Landfill Development/No Townsite Development alternative would be the same as in the Proposed Action.

Significance after Mitigation

In the Landfill Development/No Townsite Development alternative, noise levels at receivers in the Townsite would be below the level of significance.

4.13.4 Landfill Operations

4.13.4.1 Proposed Action

Impacts

Under the Proposed Action, noise from landfill operations would be generated by several sources and processes. Regular landfill operations would be performed 6 days per week,

16 hours per day (6:00 a.m. to 10:00 p.m.). Loading and unloading of waste could be performed 24 hours a day, seven days a week. Other noise sources associated with the landfill include vehicle and rail maintenance facilities, local waste inspection and receiving, material recovery facilities, and other miscellaneous ancillary facilities. Noise levels for landfill operations were estimated using conservative assumptions about equipment type, location, and duration of operation. Maximum hourly L_{eq} noise level calculations were based on landfill operations in Phase 3 of the landfill, which involves operations in the area closest to the sensitive receivers at the Townsite, the JTNP, and the JTNP wilderness. Equipment was assumed to be operating along the borders nearest the receivers. Although actual operations would not be concentrated in these areas, the analysis was conducted on the hypothetical assumption that the equipment was distributed at various locations along the border of Phase 3 of the landfill footprint nearest the Townsite, JTNP, and JTNP wilderness boundary. This conservative assumption assures that noise impacts are not underestimated.

Landfill Operations. Landfill operations include the movement of waste from staging areas and intermodal rail yards to the appropriate landfill area, disposal and compacting of waste, and the application of soil for cover. The equipment used for these processes and the noise level associated with their operation are in Table 4.13-8. Noise levels shown in Table 4.13-8 are stated at a reference distance of 50 feet. In general, noise levels for point sources decrease by approximately 6 dBA for every doubling of distance. This estimation of distance attenuation was used to calculate noise levels at all receivers that are at distances greater than 50 feet.

Table 4.13-8
Maximum Noise Levels from Landfill Equipment
(dBA)

Equipment Type (model if available)	Maximum Number of Units	Individual Equipment Noise Levels at 50 Feet
Landfill Tractor[1] (CAT D-9N)	6	84
Landfill Tractor[1] (CAT D-8N)	3	84
Water Tanker[2] (CAT 768C)	4	82
Forklift[2] (CAT IT18B)	1	78
Waste Compactor[1] (CAT 826)	6	80
Construction Truck[2] (CAT 796C)	5	82
Road Grader[1] (CAT 14G)	2	83
Wheeled Loader[2] (CAT 988)	2	87
Backhoe[2] (CAT 436B)	1	88

[1] Noise level information provided by Caterpillar Tractor Company.
[2] Noise level field measurements taken of similar equipment under normal operation.

Rail Yard Handling Equipment. Rail yard handling operations would include the use of overhead cranes, container handlers, and container transportation vehicles. Container

handling would be performed 24 hours a day, 7 days a week. The noise levels for the container handling equipment are given in Table 4.13-9. The equipment listed in Table 4.13-9 would be evenly divided between Rail Yard I and Rail Yard II.

Table 4.13-9
Maximum Noise Levels from Container Handling Equipment
(dBA)

Equipment Type	Maximum Number of Units	Individual Equipment Noise Levels at 50 Feet
Overhead Crane (Mi-Jack 80-75)	10	95
Off-road Hostling Vehicle (International DT466)	105	96

Source: U.S. Environmental Protection Agency. *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances.* 1971

Miscellaneous Noise Sources. Other miscellaneous noise sources associated with the Proposed Action include equipment maintenance, waste inspection and receiving, materials recovery, and other ancillary facilities such as administrative buildings, employees, and entrance and scale stations. Facility and equipment maintenance would include the use of compressors, welding equipment, and other miscellaneous maintenance equipment. The use of this equipment is expected to result in short-term noise level increases of up to 85 dBA at 50 feet from the activity (source: measured noise levels and U.S. Environmental Protection Agency. *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances.* 1971). Noise levels associated with the other activities mentioned would vary, but are not expected to significantly contribute to the combined noise levels from the onsite landfill operations.

Combined Noise Levels with Both Rail Yards Operating. The nearest noise sensitive receivers to the landfill operations are located at the Townsite near Phase 3 of landfill operation (see Figure 4.13-1). Combined noise levels for normal landfill operations were calculated for these noise sensitive receiver locations. Noise levels were calculated based on a normal operation of the rail yards and the landfill. The noise levels for the rail yards and landfill were then added together to provide the total noise level at each of the nearest receiver locations.

For this conservative analysis, maximum possible noise level calculations were based on landfill operations in Phase 3 of the landfill, which involves activities in the areas of the Project closest to the sensitive receivers at the Townsite, JTNP boundaries, and JTNP wilderness. Equipment was assumed to be operating along the borders nearest the receivers. The equipment was distributed at various locations along the nearest border of Phase 3 for the purpose of performing the calculations. Equipment operating at each of the locations included a CAT D-8N and D-9N landfill tractors, a CAT 826C waste compactor, and either a CAT 973 tractor loader or a CAT 988 wheeled loader.

Table 4.13-10 contains the calculated hourly equivalent noise level (L_{eq}) noise levels for each of the nearby receivers.

Table 4.13-10
Landfill Operational Noise Levels at Nearby Noise Sensitive Receivers
(Combined Noise Level with Both Rail Yards Operating)
(dBA-L_{eq})

Receiver Location	Hourly L_{eq} Noise Level at Receiver Location		
	Landfill (Phase 3)	Rail Yards I & II	Combined
Eagle Mountain Townsite Receivers			
R4	44	50	51
R6	48	56	57
R7	48	56	57
R9	45	51	52
R25	46	52	53
R26	47	54	55
R27	44	50	51
R28	46	54	55
R29	50	60	60
R32	50	59	60

As shown in the table, the L_{eq} values for the nearest sensitive receivers range from 51 to 60 dBA. The resulting noise levels are below the 65 dBA-L_{eq} County of Riverside daytime (7:00 a.m. to 10:00 p.m.) standard. However, a significant impact to Townsite receiver locations could occur during nighttime hours (10:00 p.m. to 7:00 a.m.) of operation under the proposed action. The landfill is proposed to be operated during one hour (6:00 a.m. to 7:00 a.m.) which falls within the hours designated as nighttime by the County. The County of Riverside 45 dBA-L_{eq} nighttime standard would be exceeded by 6 to 15 dBA during that hour.

Noise levels inside JTNP would vary depending on the distance and topography between the receiver location and the landfill operation. The rail yards are both located at the lower elevations of the landfill and, therefore, the natural landscape serves as a noise barrier for parts of JTNP. The JTNP boundary nearest to Phase 3 operations is approximately 1.5 miles southwest of Rail Yard I. Average hourly L_{eq} noise levels at the JTNP boundary nearest the rail yard would be 40 to 45 dBA. The noise levels at the wilderness area would be significantly lower because of the greater distance to the wilderness area of JTNP (i.e., approximately 3 miles). Average hourly L_{eq} noise levels at the JTNP wilderness area boundary nearest the rail yard would be 34 to 39 dBA. The resulting noise level increase at the JTNP wilderness area could range from 1 to 2 dBA, which is less than the standard of significance for noise impacts in the JTNP wilderness, and which would be generally imperceptible to the human ear. Actual noise levels at the wilderness area are expected to be lower because of the topography between the rail yard and the wilderness area.

During Phase 1 and Phase 2 of the landfill operations, the JTNP boundary to the north of the landfill would be the Park boundary nearest the landfill operations. The boundary of JTNP to the north of the landfill area is approximately 1.5 miles away but screened by a ridge of Eagle Mountains that is more than 500 feet higher than the highest proposed elevation of the

landfill. Projected hourly L_{eq} noise levels for this area are estimated at 36 to 41 dBA, which is less than the impact criteria established for JTNP. In addition, as sections of the landfill are completed, the noise sources would move farther away from the borders and noise levels would decrease at the Park boundary.

Mitigation

Noise impacts to the Townsite resulting from landfill operations can be reduced by applying noise mitigation measures at the source of the noise.

Noise level reductions at the noise source are often accomplished by the use of noise barriers, walls, or berms. Because of the elevation of the landfill site relative to the Townsite, these methods of reducing noise are not practical. Therefore, either the operating hours of the noise source or the location of the noise source relative to the receivers must be modified. Under the proposed plan, one hour (6:00 a.m. to 7:00 a.m.) of landfill operations would occur during the hours defined as nighttime in the County of Riverside noise standards, resulting in noise levels of 6 to 15 dBA over the County of Riverside 45 dBA-L_{eq} nighttime standard. These nighttime noise levels could be lowered by either restricting the location of equipment to at least 6,000 feet from the landfill boundary nearest the Townsite during nighttime hours or restricting work to daytime hours.

Table 4.13-11 shows the estimated nighttime noise levels at the closest Townsite receivers with the proposed nighttime mitigation measures in place. As shown in Table 4.13-11, all nighttime noise levels would meet the County's 45 dBA-L_{eq} nighttime standard. Table 4.13-11 assumes that Rail Yard I would be closed during nighttime hours (10:00 p.m. to 7:00 a.m.) and that during the first hour of landfill operations (6:00 a.m. to 7:00 a.m.) all equipment would be located at least 6,000 feet from the landfill boundary nearest the Townsite receivers. If it is not possible for equipment to be located more than 6,000 feet from the landfill boundary, then operations would not begin until daytime hours (7:00 a.m.).

Table 4.13-11
Mitigated Landfill Operational Noise Levels at Nearby Noise Sensitive Receivers
(Combined Noise Level with Both Rail Yards Operating)
(dBA-L_{eq})

Receiver Location	Hourly L_{eq} Noise Level at Receiver Location		
	Landfill[1] (Phase 3)	Rail Yard II Only	Combined
R29	44	37	45
R6	42	38	43
R7	42	38	43
R26	41	39	43
R25	40	40	43
R27	38	40	42
R4	38	40	42
R9	39	38	42
R28	40	36	41
R32	44	37	45

[1] Landfill noise levels assume that all equipment is operating at least 6,000 feet from the landfill boundary nearest the Townsite.

Significance after Mitigation

With the implementation of noise source mitigation measures, noise levels are expected to be below the County of Riverside and HUD interior noise standards.

4.13.4.2 No Action Alternative

Impacts

No landfill would be constructed under the No Action alternative. Therefore, no noise impacts would occur from landfill operations.

Mitigation

No mitigation measures are required for the No Action alternative.

Significance after Mitigation

No significant noise impacts would occur under the No Action alternative.

4.13.4.3 Reduced Volume of Onsite Disposal Alternative

Impacts

In the Reduced Volume of Onsite Disposal alternative, maximum landfill operations are expected to be slightly less to those under the proposed Project. Therefore, noise impacts associated with the operation of the landfill would be the same as under the Proposed Action.

Mitigation

Mitigation measures under the Reduced Volume of Onsite Disposal alternative would be the same as in the Proposed Action.

Significance after Mitigation

In the Reduced Volume of Onsite Disposal alternative, noise levels are expected to be below the standards of significance.

4.13.4.4 Alternate Road Access Alternative

Impacts

In the Alternative Road Access alternative, maximum landfill operations are expected to be similar to those under the proposed Project. Therefore, noise impacts associated with the operation of the landfill would be the same as under the Proposed Action.

Mitigation

Mitigation measures under the Alternate Road Access alternative would be the same as those associated with the Proposed Action.

Significance after Mitigation

Under the Alternate Road Access alternative, noise levels are expected to be below the standards of significance.

4.13.4.5 Rail Access Only Alternative

Impacts

In the Rail Access Only alternative, maximum landfill operations are expected to be similar to those under the proposed Project. Therefore, noise impacts associated with the operation of the landfill would be the same as under the Proposed Action.

Mitigation

Mitigation measures under the proposed action with Rail Access Only alternative would be the same as those associated with the Proposed Action.

Significance after Mitigation

Under the Rail Access Only alternative, noise levels are expected to be below the standards of significance.

4.13.4.6 Landfill on Kaiser Land Only Alternative

Impacts

Noise impacts associated with the operation of the landfill under the Landfill on Kaiser Land Only alternative would be slightly lower than under the proposed action due to intervening topography between the landfill and the townsite and the smaller daily waste volume.

Mitigation

Mitigation measures under the Landfill on Kaiser Land alternative would be the same as those associated with the Proposed Action.

Significance after Mitigation

Under the Landfill on Kaiser Land Only alternative, noise levels are expected to be below the standards of significance.

4.13.4.7 Landfill Development/No Townsite Development Alternative

Impacts

In the Landfill Development/No Townsite Development alternative, full build-out landfill operations are expected to be similar to those under the proposed Project. Therefore, noise impacts associated with the operation of the landfill would be the same as under the Proposed Action.

Mitigation

Mitigation measures under the Landfill Development/No Townsite Development alternative would be the same as those associated with the Proposed Action.

Significance after Mitigation

Under the Landfill Development/No Townsite Development alternative, noise levels are expected to be below the standards of significance.

4.13.5 Landfill Construction

4.13.5.1 Proposed Action

Impacts

Noise would be generated by the use of heavy equipment during construction of the Proposed Action.

Estimates of construction noise levels were made based on field measurements and the U.S. Environmental Protection Agency's *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances* (1971). These estimates should be considered approximations because, at this preliminary stage of the Project, assumptions must be made about the type of construction equipment to be used, the location and duration of use, and the noise characteristics of each piece of equipment.

Landfill Construction. Table 4.13-12 shows the noise levels for construction equipment typically associated with landfill construction.

Table 4.13-12
Estimated Construction Equipment Noise Levels for Landfill
(dBA measured at 50 feet)

Type of Equipment	Noise Level for One Unit
Large Excavator	75
Backhoe	83
Bulldozer	80
Dump Truck	82
Rock Drill	80
Rock Crusher[2]	78
Vibratory Compaction Equipment	75

[2] Based on field measurements.
Source: U.S. Environmental Protection Agency. *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances*. 1971.

The nearest sensitive receivers to the Project site include: (1) residences located in the Townsite near Phase 3 of the landfill (R4, R6, R7, R9, and R25 through R29), (2) the JTNP (R8/M8); (3) and the JTNP wilderness area (R31) near Phases 1 and 2 of the landfill. Receiver locations are shown in Figure 4.13-1. Table 4.13-13 compares peak construction noise levels with the County of Riverside standard. For this conservative estimate, five pieces of equipment were assumed to be operating simultaneously near the perimeter of the landfill closest to each receiver. During typical construction operations, however, noise levels at each receiver are expected to be lower than estimated because all equipment would not be concentrated at the boundary of each landfill phase closest to the sensitive receivers.

Normally, landfill construction would occur during daytime hours from 7:00 a.m. to 7:00 p.m. only. The only exception would be the summer installation of landfill liners during nighttime hours because of the increased heat during these months. This is expected to occur approximately two weeks per year.

As discussed earlier, noise levels from point sources generally decrease by approximately 6 dBA for every doubling of distance. The decrease is due to sound waves spreading out as they travel away from the noise source. Topography, vegetation, and atmospheric conditions also tend to reduce noise levels at locations remote from the source. None of these noise-reducing effects was included in this conservative estimate.

As shown in Table 4.13-13, noise levels would increase by up to 12 dBA at the Townsite during landfill construction activities. However, noise levels are not expected to exceed the County of Riverside standards for construction at any of the residential receivers during daytime hours.

Table 4.13-13
Maximum Noise Levels During Construction of Landfill
(dBA-Leq)

Receiver	Existing	Total Projected Noise Level at Receiver During Construction	County of Riverside Noise Standard
Eagle Mountain Townsite Receivers			
R4	38	50	65
R6	63	63	65
R7	47	53	65
R9	39	48	65
R25	53	55	65
R26	49	54	65
R27	54	56	65
R28	38	49	65
R29	50	55	65
R32	50	55	65
Joshua Tree National Park (R8) and Joshua Tree National Wilderness Area (R31)			
R8	41	48	--[1]
R31	41	43	--[1]

[1] The County of Riverside Noise Element of the General Plan contains no applicable noise level standards for National Parks.

Noise levels at the JTNP and the JTNP wilderness area during landfill construction could increase by up to 7 dBA and 2 dBA, respectively. These levels are below the impact criteria for noise increases at the JTNP wilderness area. Noise levels would decrease as equipment moves further to the east from the JTNP boundaries as the landfill is developed in phases. It should also be noted that no attenuation resulting from topography, vegetation, or atmospheric conditions was included and that construction is a short-term impact. Therefore, actual noise levels at the JTNP and the JTNP wilderness area during construction would be less than shown in Table 4.13-13.

Ancillary Facilities. Construction of ancillary facilities would take place in Phase 2, and would include the truck marshaling yard, the maintenance and administrative buildings, and the upper rail yard. Table 4.13-14 shows noise levels for construction equipment typically associated with construction of these types of ancillary facilities.

Table 4.13-14
Estimated Construction Equipment Noise Levels for Ancillary Facilities
(dBA measured at 50 feet)

Type of Equipment	Noise Level for One Unit
Truck	82
Scraper	80
Concrete Mixer	85
Rock Drill	80
Derrick Crane	84

Source: U.S. Environmental Protection Agency. *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances*. 1971.

The nearest sensitive receivers to Planning Area 2 (where construction of ancillary facilities would occur) include residences located in the Townsite (R4, R6, R7, R9, and R25 through R29), JTNP (R8/M8), and the JTNP wilderness area (R31). Receiver locations are shown in Figure 14.13-1. Table 4.13-15 compares peak construction noise levels with the County of Riverside daytime standard. It is assumed that all construction activities would take place during daytime hours. For this conservative estimate, four pieces of equipment were assumed to be operating simultaneously along the perimeter of Phase 2 at the point closest to each receiver.

Table 4.13-15
Estimated Noise Levels During Construction of Ancillary Facilities
(dBA-Leq)

Receiver	Existing Noise Level	Total Projected Noise Level at Receiver During Construction	County of Riverside Noise Standard
Eagle Mountain Townsite Receivers			
R4/M4	38	44	65
R6/M6	63	63	65
R7/M7	47	50	65
R9/M9	39	46	65
R25	53	54	65
R26	49	51	65
R27	54	54	65
R28	38	48	65
R29	50	52	65
R32	50	53	65
Joshua Tree National Park (R8) and Joshua Tree National Wilderness Area (R31)			
R8	41	49	--[1]
R31	41	43	--[1]

[1] The County of Riverside Noise Element of the General Plan contains no applicable noise level standards for National Parks.

As shown in Table 4.13-15, although noise levels could increase by up to 11 dBA at the Townsite during the construction of ancillary facilities, noise levels are not expected to exceed the County of Riverside standards for construction during daytime hours at any residential receivers.

Calculated noise levels during ancillary facilities construction at the JTNP boundary and the JTNP wilderness area could increase by up to 9 dBA and 3 dBA, respectively. This is below the impact criteria set for the JTNP wilderness area. No attenuation due to topography, vegetation, or atmospheric conditions was included. Therefore, actual noise levels at the JTNP and the JTNP wilderness area during construction are expected to be less than shown in Table 4.13-15.

Mitigation

Construction noise levels (see Tables 4.13-12 and 4.13-14) would be intermittent and of short duration. The noise levels depicted in those tables would be expected only if all the

equipment is operating concurrently and were concentrated at the landfill border nearest the receiver.

Although no significant noise impacts to nearby Townsite residences would occur during the construction of the landfill and ancillary facilities, noise levels are expected to increase over existing conditions at some receivers. The following measures could be implemented to reduce the noise levels during construction.

- No construction on Sundays and legal holidays, or between the hours of 7 p.m. and 7 a.m. on other days except for liner construction during mid-summer
- If nighttime construction is required, group construction activities together to avoid continuing periods of high disturbance. The only likely night-time construction would be for liner installation during periods of especially hot weather (no more than two weeks/year)
- If nighttime construction is required, prohibit the use of gasoline powered generators during construction activities. In place of these generators, a temporary power pole or connection to an existing electrical outlet could be used to power the equipment and lighting needed for the nighttime operation
- Require all engine-powered equipment to have mufflers installed according to the manufacturer's specifications, and require all equipment to comply with pertinent equipment noise standards of the U.S. Environmental Protection Agency

If specific noise complaints are received during construction, one or more of the following noise mitigation measures can be implemented:

- Locate stationary construction equipment as far from nearby noise-sensitive properties as possible
- Notify nearby residents whenever extremely noisy work will be occurring
- Utilize stock piles as effective noise barriers when feasible
- Shut off idling equipment
- Install temporary or portable acoustic barriers around stationary construction noise sources

Significance after Mitigation

Although noise levels could temporarily increase during construction activities at some receivers, all levels are expected to be below the County of Riverside standards. Therefore, no significant impacts are expected.

4.13.5.2 No Action Alternative

Impacts

No construction activities and thus no construction noise impacts would occur under the No Action alternative.

Mitigation

No mitigation measures are required for the No Action alternative.

Significance after Mitigation

No significant noise impacts would occur under the No Action alternative.

4.13.5.3 Reduced Volume of Onsite Disposal Alternative

Impacts

Under the Reduced Volume of Onsite Disposal alternative, a similar level of construction activity will occur as under the proposed action. Therefore, construction-related noise impacts are expected to be the same as those discussed in the Proposed Action.

Mitigation

Mitigation measures under the Reduced Volume of Onsite Disposal alternative would be the same as those associated with the Proposed Action.

Significance after Mitigation

Although noise levels could temporarily increase during construction activities at some receivers, all levels are expected to be below the County of Riverside standards. Therefore, no significant impacts are expected.

4.13.5.4 Alternate Road Access Alternative

Impacts

Under the Alternate Road Access alternative, the same level of construction activity will occur as under the Proposed Action. Therefore, construction related noise impacts are expected to be the same as those discussed in the Proposed Action.

Mitigation

Mitigation measures under the Alternate Road Access alternative would be the same as those associated with the Proposed Action.

Significance after Mitigation

Although noise levels could temporarily increase during construction activities at some receivers, all levels are expected to be below the County of Riverside standards. Therefore, no significant impacts are expected.

4.13.5.5 Rail Access Only Alternative

Impacts

Under the Rail Access Only alternative, the same level of construction activity will occur as under the Proposed Action. Therefore, construction related noise impacts are expected to be the same as those discussed in the Proposed Action.

Mitigation

Mitigation measures under the Rail Access Only alternative would be the same as those associated with the Proposed Action.

Significance after Mitigation

Although noise levels could temporarily increase during construction activities at some receivers, all levels are expected to be below the County of Riverside standards. Therefore, no significant impacts are expected.

4.13.5.6 Landfill on Kaiser Land Only Alternative

Impacts

Under the Landfill on Kaiser Land Only alternative, the same level of construction activity will occur as under the Proposed Action. Therefore, construction related noise impacts are expected to be the same as those discussed in the Proposed Action.

Mitigation

Mitigation measures under this alternative would be the same as those associated with the Proposed Action.

Significance after Mitigation

Although noise levels could temporarily increase during construction activities at some receivers, all levels are expected to be below the County of Riverside standards. Therefore, no significant impacts are expected.

4.13.5.7 Landfill Development/No Townsite Development Alternative

Impacts

Under the Landfill Development/No Townsite Development alternative, the same level of construction activity will occur as under the Proposed Action. Therefore, construction related noise impacts are expected to be the same as those discussed in the Proposed Action.

Mitigation

Mitigation measures under the Landfill Development/No Townsite Development alternative would be the same as those associated with the Proposed Action.

Significance after Mitigation

Although noise levels could temporarily increase during construction activities at some receivers, all levels are expected to be below the County of Riverside standards. Therefore, no significant impacts are expected.

4.13.6 Combined Noise Impacts

4.13.6.1 Proposed Action

Impacts

Combined noise impacts were calculated for normal Project operation, and include those produced by landfill operation, rail traffic and rail yard operations, container handling, and vehicle traffic to and from the site. Mitigated noise source CNEL values at each of the receiver locations are provided in Table 4.13-16. The mitigation measures assumed in these calculations include:

- No nighttime train traffic to Rail Yard I
- Restricting the flow of nighttime truck traffic along Kaiser Road near the Townsite
- No nighttime operations at Container Handling Yard I
- During nighttime landfill operations, all equipment would be located at least 6,000 feet from the landfill boundary nearest the receivers

As shown in Table 4.13-16, all noise levels are expected to be below the County of Riverside CNEL standards except for receivers R19 and R22. Both of these receivers are located within 50 feet of Kaiser Road or Eagle Mountain Road and are used for commercial or industrial purposes. No residential receivers are expected to be impacted.

The two receiver locations for JTNP (JTNP boundary [R8] and JTNP wilderness [R31]), were evaluated using the mitigated combined noise levels. Using conservative estimates based on worst-case conditions for operating equipment onsite (see discussion of Ancillary Facilities, above), the combined noise level increase at the JTNP boundary would be no greater than 10 dBA and the JTNP wilderness area would be no greater than 2 dBA. This increase of 2 dBA is below the standard of significance for noise impacts in the JTNP wilderness area.

Mitigation

Home insulation and heating, ventilating and air conditioning (HVAC) noise mitigation, as described in section 4.13.5.1 would be required at residential receivers located within 50 feet of Kaiser Road or Eagle Mountain Road. Another option would be to create a 50 foot buffer zone on both sides of these roadways in which no new development could occur.

Significance after Mitigation

The potential for noise impacts is not significant under the Proposed Action with the proposed mitigation measures.

4.13.6.2 No Action Alternative

Impacts

Under the No Action alternative no operational or construction activities would occur. Therefore, no noise level increases associated with the Project would occur and there would be no noise impacts.

Mitigation

No mitigation measures are required for the No Action alternative.

Significance after Mitigation

There would be no significant noise impacts in the No Action alternative.

Table 4.13-16
Combined Noise Level Comparison of the Existing Conditions, the No Project Alternative, and the Proposed Action with Mitigation (dBA-CNEL)

Modeling Location	Existing	Future Conditions No Action	Proposed Action (PA)	Increase (PA minus Existing)	County of Riverside CNEL Guideline
Eagle Mountain Townsite Receivers					
R4	44	47	49	6	70
R5	50	52	66	16	70
R6	69	71	68	2	70
R7	53	55	54	2	65
R9	45	47	57	12	65
R25	59	61	58	2	65
R26	55	57	54	2	65
R27	61	63	59	2	65
R28	45	47	54	9	65
R29	57	59	57	2	70
R32	57	60	63	3	65
Lake Tamarisk Receivers					
R12	54	55	57	3	65
R13	55	55	58	3	65
R14	60	62	65	5	70
R16	53	53	55	2	65
R17	55	56	59	4	65
R18	58	60	64	6	70
Joshua Tree National Park (R8/M8) and JTNP Wilderness Area (R31)					
R8	39	42	49	10	N/A[1]
R31	39	40	41	2	N/A[1]
Pump Station Receivers					
R2	50	50	53	3	70
R3	36	35	40	4	70
Eagle Mountain Road (50, 100, 250 feet from centerline)					
R22	61	61	72	11	70
R23	58	58	67	9	70
R24	55	55	61	6	70
Eagle Mountain Road (Near Interstate 10)					
R1	73	73	74	1	N/A[2]
R15	70	70	70	0	N/A[2]
Kaiser Road (50, 100, 250 feet from centerline)					
R19	64	67	71	7	70
R20	62	64	68	6	70
R21	58	60	64	6	70
Kaiser Road (Near Interstate 10)					
R10	70	70	72	2	N/A[2]
R11	66	67	69	3	N/A[2]
Residential/Church South of Eagle Mountain Town Site					
R30	57	59	63	6	70

(N/A) [1] There are no CNEL guidelines for national parks or designated wilderness. For the purposes of this EIS/EIR, however, 3 dBA has been established as the allowable change from existing conditions for designated wilderness areas of JTNP (R31).
(N/A) [2] There are no CNEL guidelines for undeveloped lands.

4.13.6.3 Reduced Volume of Onsite Disposal Alternative

Impacts

Combined noise impacts under the Reduced Volume of Onsite Disposal alternative would be the same as those identified under the Proposed Action.

Mitigation

No mitigation measures are required under the Proposed Action, beyond those described in Sections 4.1 through 4.7.

Significance after Mitigation

The potential for noise impacts is not significant under the Reduced Volume of Onsite Disposal alternative with the proposed mitigation measures.

4.13.6.4 Alternate Road Access Alternative

Impacts

Combined noise impacts under the Alternate Road Access alternative would be the same as those identified under the Proposed Action.

Mitigation

No mitigation measures are required under the proposed action, beyond those described in Sections 4.1 through 4.7.

Significance after Mitigation

The potential for noise impacts is not significant under the Alternate Road Access alternative with the proposed mitigation measures.

4.13.6.5 Proposed Action with Rail Access Only Alternative

Impacts

Combined noise impacts under the proposed action with Rail Access Only alternative would be the same as those identified under the Proposed Action.

Mitigation

No mitigation measures are required under the proposed action, beyond those described in Sections 4.1 through 4.7.

Significance after Mitigation

The potential for noise impacts is not significant under the Proposed Action with Rail Access Only alternative with the proposed mitigation measures.

4.13.6.6 Landfill on Kaiser Land Only Alternative

Impacts

Combined noise impacts under the Landfill on Kaiser Land Only alternative would be the same as those identified under the Proposed Action.

Mitigation

No mitigation measures are required under the Proposed Action, beyond those described in Sections 4.1 through 4.7.

Significance after Mitigation

The potential for noise impacts is not significant under this alternative with the proposed mitigation measures.

4.13.6.7 Landfill Development/No Townsite Development Alternative

Impacts

Combined noise impacts under the Landfill Development/No Townsite Development alternative would be the same as those identified under the Proposed Action.

Mitigation

No mitigation measures are required under the Landfill Development/No Townsite Development alternative.

Significance after Mitigation

The potential for noise impacts is not significant under the Landfill Development/No Townsite Development alternative with the proposed mitigation measures.

4.13.7 Non-Human Noise Sensitive Receptors

Some animal species may be sensitive to noise generated by the construction and operation of the landfill. The possible effects of noise on animals are similar to those experienced by humans, and include hearing impairment, communication masking, nonauditory physiological effects, and behavioral changes.

4.13.7.1 Proposed Action

Impacts

Several special-status animal species that may potentially be impacted by noise levels from construction and landfill operations inhabit the area around the Proposed Action. A complete discussion of these species can be found in Section 4.7 of this EIS/EIR.

The desert tortoise and the American badger are known to have burrows near the rail line, which is not currently in use. Under the Proposed Action, the Eagle Mountain Railroad would become active, which would could lead to hearing loss and stressful conditions to the tortoises and badgers. As discussed in Section 4.7, this is not expected to reduce significantly the population or the amount of habitat for these species and therefore, is not considered an impact.

The Nelson's bighorn sheep is found in the vicinity of the Project. Increased noise levels due to construction and operational activities may create stressful conditions for the sheep. Historically, however, sheep have been seen very close to active mining areas. As discussed in Section 4.7, this disturbance is not expected to have a significant impact on the species.

Two species of bats currently roost in the vicinity of the proposed Project, the California leaf-nosed bat and the Townsend's big-eared bat. Little information is available on the effect of noise on bat species. Bats are very sensitive to disturbances and would likely abandon their current roosting area under the proposed action. Noise may contribute to the impacts on the bat species. Potential impacts to bats are discussed further in Section 4.7.

Mitigation

No mitigation measures are required under the Proposed Action, beyond those described in Section 4.7.

Significance after Mitigation

No significant noise impacts are predicted for the Proposed Action.

4.13.7.2 No Action Alternative

Impacts

Under the No Action alternative, no operational or construction activities would occur. Therefore, no noise level increases associated with the Project would occur and there would be no noise impacts to nonhuman noise sensitive receptors.

Mitigation

No mitigation measures are required for the No Action alternative.

Significance after Mitigation

The potential for noise impacts is not significant under the No Action alternative.

4.13.7.3 Reduced Volume of Onsite Disposal Alternative

Impacts

Noise impacts to nonhuman noise sensitive receptors under the Reduced Volume of Onsite Disposal alternative would be the same as those identified under the Proposed Action.

Mitigation

No mitigation measures are required under the Reduced Volume of Onsite Disposal alternative.

Significance after Mitigation

The potential for noise impacts is not significant under the Reduced Volume of Onsite Disposal alternative.

4.13.7.4 Alternate Road Access Alternative

Impacts

Noise impacts to nonhuman noise sensitive receptors under the Alternate Road Access alternative would be the same as those identified under the Proposed Action.

Mitigation

No mitigation measures are required under the Alternate Road Access alternative.

Significance after Mitigation

The potential for noise impacts is not significant under the Alternate Road Access alternative.

4.13.7.5 Rail Access Only Alternative

Impacts

Noise impacts to nonhuman noise sensitive receptors under the proposed action with Rail Access Only alternative would be the same as those identified under the Proposed Action.

Mitigation

No mitigation measures are required under the Proposed Action with Rail Access Only alternative.

Significance after Mitigation

The potential for noise impacts is not significant under the Proposed Action with Rail Access Only alternative.

4.13.7.6 Landfill on Kaiser Land Only Alternative

Impacts

Noise impacts to nonhuman noise sensitive receptors under the Landfill on Kaiser Land Only alternative would be the same as those identified under the Proposed Action.

Mitigation

No mitigation measures are required under this alternative.

Significance after Mitigation

The potential for noise impacts is not significant under this alternative.

4.13.7.7 Landfill Development/No Townsite Development Alternative

Impacts

Noise impacts to nonhuman noise sensitive receptors under the Landfill Development/No Townsite Development alternative would be the same as those identified under the Proposed Action.

Mitigation

No mitigation measures are required under the Landfill Development/No Townsite Development alternative.

Significance after Mitigation

The potential for noise impacts is not significant under the Landfill Development/No Townsite Development alternative.

4.14 Cultural Resources

This analysis evaluates those aspects of the proposed action and alternatives that could pose the potential for significant adverse impacts to cultural or historical resources within the vicinity of the proposed Project. In the interim since the previous EIR was certified and subsequently challenged, two studies have been undertaken to assess cultural resources in the vicinity of the proposed Project. In August 1995, Greenwood and Associates conducted an inventory of the Eagle Mountain Townsite adjacent to the mine and determined that the site was not eligible for inclusion in the National Register of Historic Places. In October 1995, CH2M HILL conducted a field inspection of the mine, reviewed pertinent literature, and discussed the features of the mine with mine employees to assess eligibility of the mining and ore processing operation for the National Register. This evaluation confirmed the Greenwood findings of noneligibility. The reports summarizing the findings of the most recent field visits are contained in Appendix K, *Updated Cultural Resources Inventory*. The possibility that the Eagle Mountain Mine could be eligible for listing in the National Register of Historic Places also was raised by JTNP staff as part of the scoping process for the proposed Project. This issue is addressed in this section.

4.14.1 Standards of Significance

Under NEPA, identification and evaluation of historic properties potentially affected by proposed action of a federal agency is subject to Section 106 of the National Historic Preservation Act (NHPA) of 1966 (36 CFR 800.1). In addition, the federal agency involved in the proposed action is required, in consultation with the State Historic Preservation Officer (SHPO), to make a reasonable and good faith effort to identify historic properties that may be affected by the undertaking and to gather sufficient information to evaluate the eligibility of the properties for the National Register of Historic Places (or National Register—36 CFR 800.4). The basic steps in the Section 106 process are: (1) identification and evaluation of properties within the area of potential effect (APE) of the property for eligibility for National Register listing (36 CFR Part 60.4); and (2) assessment of effects of the project on cultural resources listed or determined eligible for listing on the National Register (36 CFR Part 800.9(a)).

Under 36 CFR Part 800.9(a), a project is considered to have an effect on a historic property if the project will alter features of the location, setting, or use of the project relevant to determining National Register eligibility. If no project-related effect is found to exist, a No Effect Determination is made. If an effect is found, Criteria of Adverse Effect [36 CFR Part 800.9(b)] are applied.

- The project would be a significant impact if it had an adverse effect on historic properties, including but are not limited to:

  (1) Physical destruction, damage, or alteration

  (2) Isolation/alteration of the property setting

(3) Introduction of visual, audible, or atmospheric elements out of character with the property/setting

(4) Neglect resulting in deterioration/destruction

(5) Transfer, lease, or sale of the property

According to Appendix G of the CEQA Guidelines, a project will normally have a significant effect on the environment if it will "disrupt or adversely affect a prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic or social group." Appendix K of the CEQA Guidelines states that if a project may cause damage to an important archaeological resource, the project may have a significant effect on the environment. For the purposes of CEQA, an "important archaeological resource" is one that is at least one of the following:

- Is associated with an event or person of: (1) Recognized significance in California or American history; or (2) Recognized scientific importance in prehistory
- Can provide information that is both of demonstrable public interest and useful in addressing scientifically consequential and reasonable or archaeological research questions
- Has a special or particular quality, such as oldest, best example, largest, or last surviving example of its kind
- Is at least 50 years old and possesses substantial stratigraphic integrity
- Involves important research questions that historical research has shown can be answered only with archaeological methods

4.14.2 Cultural Resources Assessment

This section evaluates the Proposed Action and the alternatives and for cultural resources.

4.14.2.1 Proposed Action

Archaeological sites are nonrenewable historic and scientific resources, and any disturbance or disruption of a site must be considered as potentially significant. To evaluate the potential for the proposed Project to affect cultural resources adversely, a Class III cultural resource inventory (Greenwood and Associates, 1995) was conducted of the Townsite and the mine site (CH2M HILL, 1995) (Section 3.14.4). This investigation, the results of which are included as Appendix K of this EIS/EIR, comprised a review of available archaeological site archives, historical maps, and documents concerning the proposed Project, as well as an intensive surface field reconnaissance of the proposed Townsite and mine site areas.

Impacts. The Eagle Mountain Mine operated on a full-time basis for approximately 34 years (i.e., between 1948 and 1982). Properties that are less than 50 years old are generally not eligible for listing in the National Register. Properties that do not meet the 50-year guideline, can, however, be listed if they can be shown to be of "exceptional importance." Because of this criterion, a key element in the analysis of eligibility was determining whether a reasonable case can be made that the mine meets the exceptional importance requirement. Two additional key elements in the process of assessing National Register eligibility of any property are the significance and integrity of a site. For this EIS/EIR, these criteria were applied to the evaluation of the mine site. The results of the two field surveys identified no historic properties within or proximate to the proposed Project that would qualify as a cultural resource for National Register listing (see Appendix K). A Section 106 certification was previously obtained for a small prehistoric site adjacent to the railroad tracks. Development of the proposed Project is unlikely to result in any direct or indirect impacts on significant cultural resources.

Mitigation. No additional mitigation measures beyond those associated with existing requirements and aspects of the proposed Project are necessary or warranted.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce the potential for cultural resources impacts to be below the level of significance.

4.14.2.2 No Action Alternative

Impacts. The No Action Alternative would preclude the occurrence of any potential cultural or historical impacts.

Mitigation. No mitigation measures are required for this alternative.

Significance After Mitigation. The potential for adverse cultural resource impacts is not significant for this alternative.

4.14.2.3 Reduced Volume of Onsite Disposal Alternative

Impacts. The potential impacts under this alternative would be identical with those of the Proposed Action. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. The absence of renovating the Townsite would not result in the need for any additional mitigation measures. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce the potential for cultural resource impacts to below the threshold of significance for this alternative.

4.14.2.4 Alternate Road Access Alternative

Impacts. The potential impacts under this alternative would be identical with those of the Proposed Action. A change in landfill access would not alter daily operations of the Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce the potential for cultural resource impacts to below the level of significance for this alternative.

4.14.2.5 Rail Access Only Alternative

Impacts. The potential cultural resource impacts under this alternative would be identical with those of the Proposed Action. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce the potential for cultural resource impacts to below the level of significance for this alternative.

4.14.2.6 Landfill on Kaiser Land Only Alternative

Impacts. The potential impacts under this alternative would be identical with those of the Proposed Action. A change in landfill volume/configuration would not alter daily operations of the Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce the potential for cultural resource impacts to below the level of significance for this alternative.

4.14.2.7 Landfill Development/No Townsite Development Alternative

Impacts. The potential impacts under this alternative would be identical with those of the Proposed Action. Eliminating renovation of the Townsite would have essentially no effect

on the daily operations of the Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. The absence of renovating the Townsite would not result in the need for additional mitigation measures. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce the potential for cultural resource impacts to below the level of significance for this alternative.

4.15 Paleontology

4.15.1 Standards of Significance

Sensitive paleontological resources identified on the Project site would be considered nonrenewable scientific resources. For the following environmental analysis, an impact will be considered significant if the Proposed Action were to result in destruction of significant fossil deposits in sensitive areas.

4.15.2 Paleontological Assessment

This section assesses the paleontological impacts associated with the proposed action and the alternatives.

4.15.2.1 Proposed Action

Impacts. At the proposed landfill site, proposed areas for fill, new structures, and lay-down and staging areas would be developed by grading and excavation, which could produce impacts to nonrenewable paleontological resources in sedimentary rocks. Upgrading, realignment, and development of drainage structures along Eagle Mountain Road would also involve excavation. Annual maintenance with excavation equipment could impact nonrenewable paleontological resources in sedimentary rock units. Because the potential for preserved resources in this area is quite low, however, this impact is not significant.

Any improvements to Eagle Mountain Road at the I-10 exit required by the Riverside County Transportation Department could impact paleontological resources. These resources consist of vertebrate fossils within stable sediments with developed soil horizons.

Rehabilitation of the railroad and required maintenance activities will include track straightening and alignment, ballast regulation, culvert cleanout and repair, vegetation control, and oiler maintenance in the areas identified as paleontologically sensitive by San Bernardino County Museum. Although potentially significant fossil-bearing deposits were identified along portions of the right-of-way, the proposed railroad rehabilitation activities will not involve excavations or movement of dirt. Therefore, impacts to paleontological resources are not expected in this area.

Mitigation. A program to mitigate potential impacts is proposed. The measures outlined below will be required for any major excavations in the areas associated with the I-10 and Eagle Mountain Road interchange.

- Preparation of a paleontological monitoring program that will include paleontological personnel qualifications, monitoring and recovery methodology, and curation and report standards. The plan will be prepared by a paleontologist who meets the professional standards of the industry as is required by the County of Riverside

Planning Department. The plan will be approved and implemented by the County of Riverside. The plan shall also include a method for coordination of work stoppage by a County representative acting in the role of an authorized officer.

- Pre-excavation survey to recover paleontological resources exposed in areas of proposed excavation.

- Monitoring of excavation by qualified paleontological monitors (as specified in the monitoring plan) to salvage resources as they are uncovered by excavation. This includes the recovery, removal, and processing of adequate samples of sediments containing small to microscopic vertebrate fossils. Monitors should be equipped to salvage fossils as they are unearthed, without unnecessary delays to excavation schedules. Monitors must be empowered to temporarily halt or divert construction equipment (in coordination with the County authorized officer) if necessary to remove large or abundant fossil specimens.

- Preparation of fossils to a point of identification and stabilization. This includes wet screening of matrix containing fossils to recover small to microscopic vertebrate remains from sediments. Matrix must be removed from large specimens to reduce volumes during storage.

- Identification of specimens, curation, and storage in an established repository with retrievable collections.

- Preparation of a report of findings, including an itemized inventory of specimens accessioned into the museum's collections. The report will be completed within 3 months of the completion of grading in sensitive areas and will be submitted to the County of Riverside, BLM, and San Bernardino County Museum.

- These conditions must be fulfilled to the satisfaction of the Riverside County Planning Director as part of the conditions placed on the Specific Plan. The County of Riverside prefers the San Bernardino County Museum to complete the monitoring, curation, and reporting program. This institution will serve as the repository for recovered fossil resources and can provide the necessary monitoring and recovery services. If an alternative paleontological contractor is to be used, prior approval must be received from the County Planning Direction.

Significance After Mitigation. The potential for activities associated with Eagle Mountain Road improvements at the interchange with I-10 to result in significant impacts to nonrenewable paleontological resources will be mitigated to levels below significance by implementation of a program that includes the mitigation measures listed above.

4.15.2.2 No Action Alternative

Impacts. The No Action Alternative would preclude the occurrence of any potential paleontological impacts.

Mitigation. No mitigation measures are required for this alternative.

Significance After Mitigation. The potential for adverse paleontological resource impacts is not significant for this alternative.

4.15.2.3 Reduced Volume of Onsite Disposal Alternative

Impacts. The potential impacts under this alternative would be identical with those of the Proposed Action. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The reduced landfill operations could also result in significant impacts to nonrenewable paleontological resources in the area of the Eagle Mountain Road and I-10 interchange. The impacts, however, would be mitigated to levels below significance by the recommended mitigation measures.

4.15.2.4 Alternate Road Access Alternative

Impacts. The potential impacts under this alternative would be identical with those of the Proposed Action. A change in landfill access would not alter daily operations of the Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce the potential for paleontological resource impacts to below the level of significance for this alternative.

4.15.2.5 Rail Access Only Alternative

Impacts. Because no improvements to Eagle Mountain Road in the vicinity of the I-10 interchange would occur under this alternative, no impacts would occur.

Mitigation. Because there would be no impact, no mitigation would be required.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce the potential for paleontological resource impacts to below the level of significance for this alternative.

4.15.2.6 Landfill on Kaiser Land Only Alternative

Impacts. The potential impacts under this alternative would be identical with those of the Proposed Action. A change in landfill volume/configuration would not alter daily operations of the Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce the potential for paleontological resource impacts to below the level of significance for this alternative.

4.15.2.7 Landfill Development/No Townsite Development Alternative

Impacts. The potential impacts under this alternative would be identical with those of the Proposed Action. Elimination of further Townsite development would have essentially no effect on the daily operations of the Project. This alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

Mitigation. Mitigation measures would be the same as those associated with the Proposed Action.

Significance After Mitigation. The mitigation measures incorporated into the proposed Project design would reduce the potential for paleontological resource impacts to below the level of significance for this alternative.

4.16 Energy Consumption and Generation

For the proposed Project, energy consumption and generation impacts are associated with landfill activities related to transporting, handling, and disposing of refuse, as well as with end uses associated with anticipated renovation of the Eagle Mountain Townsite. The principal forms of energy to be used are fossil fuels (diesel fuel and natural gas) and electricity.

4.16.1 Standards of Significance

The CEQA Guidelines (Appendix G) state that a project will normally be considered to have a significant effect on the environment if it will encourage activities that result in the use of large amounts of fuel, or if it will use fuel or energy in a wasteful manner. There are no specific state or federal standards that indicate what is to be considered a "large amount" of fuel or energy. Nevertheless, energy impacts attributable to the proposed Project have been determined to be significant if project implementation were to result in any of the following:

- Substantial expansion of the existing electrical energy supply infrastructure (e.g., generation, transmission, and distribution lines) to service both the landfill and Eagle Mountain Townsite;
- Substantial increase over baseline conditions in peak load (kilowatts) and power production (kilowatt hours);
- Substantial increase over baseline conditions in fuel consumption required to transport, handle, and dispose of waste at the landfill; and
- Use of energy in a wasteful or inefficient manner.

For the purpose of this analysis, the significance of energy consumption impacts is based on the ratio of the proposed project annual energy consumption to the existing, or baseline, energy consumption within the South Coast Air Basin. Impacts are considered significant if:

- Project-related annual energy consumption exceeds 1 percent of the total current or projected baseline energy resource annual consumption within the South Coast Air Basin (SCAB).

4.16.2 Proposed Action

4.16.2.1 Impacts

Baseline Electrical Energy Demand and Supply Infrastructure. Within the South Coast Air Basin, annual electrical energy usage for 1990 was approximately 117,724 gigawatt hours (GWh) or 11.7 x 10^{10} kilowatt hours (kWhr) (SCAQMD 1995). As noted in Section 3.12,

Utilities and Services, the Project site and surrounding area in Riverside County lie within the service territory of Southern California Edison (SCE). The electrical distribution system (substation and lines) for Eagle Mountain is intact. Major transmission lines exist along Interstate 10 and southeast of Eagle Mountain. SCE transmits electric power to a Kaiser substation for distribution to the mine site and the Townsite. The correctional facility and housing areas used by MTC are served directly by SCE. Potential electrical energy impacts associated with the proposed Project are directly related to the landfill facility and to the repopulation of the Townsite, as well as indirectly to JTNP and the Eagle Crest Energy hydroelectric project.

Townsite. As a result of the proposed Project, renovation and repopulation of the Eagle Mountain Townsite is expected. As noted in Section 3.8, Socioeconomics, of the 410 existing Townsite residences, 146 are occupied by or reserved for employees of the correctional facility or Kaiser. To accommodate the landfill planned staff and dependents, an estimated 163 additional households are expected as part of the Townsite Specific Plan for a total of 309 households (see Section 4.5, Land Use).

SCE has supplied actual billing information from existing households in the Townsite (SCE 1995). This information has been used to estimate an annual energy usage of 25,000 kWhr per household. With the additional households planned in the Townsite, this equates to a total electrical demand of approximately 7,725,000 kWhr per year, or several orders of magnitude less than 1 percent of the 1990 annual SCAB electrical energy consumption. In addition, as noted in Section 4.12, Utilities and Services, there are no substantial Project-induced effects associated with renovation of the Townsite that would adversely affect electrical energy supply. Consequently, from the standpoint of energy supply issues, Project-related repopulation of the Townsite does not constitute a significant impact as defined under CEQA.

Landfill. Electrical energy consuming facilities or operations associated with the landfill include:

- Entrance Facilities - Scales
- Administration Building/Employee Facilities
- Fueling Facilities
- Waste Inspection Facility
- Vehicle Maintenance Facilities
- Rail Marshalling Yards/Rail Maintenance
- Groundwater Pumping
- Flare Stations

At the Project's maximum 20,000-tpd disposal capacity, annual electrical energy usage at the landfill is estimated to be 8,468,000 kW-hr (~8.47 x 10^3 MW-hr), which is equivalent to approximately 339 homes, as defined above (25,000 kWhr per household). The LFG flare stations and the groundwater pumping system are expected to be the largest electrical energy consuming components of the proposed Project.

The infrastructure to import electrical power is in place. An existing 66-kV subtransmission line and an existing 12-kV distribution line from SCE are in place with adequate power capacity to accommodate this project (SCE 1995). Providing electrical energy to a new end-user equivalent in magnitude to approximately 339 homes would not require additions to or expansions of existing or planned SCE generating or transmission capacity. In addition, the electrical energy required to supply the proposed landfill project is less than the electricity demand that was associated with the former full-time operation of Kaiser's Eagle Mountain Mine. As in the case of the Townsite, from the standpoint of electrical energy supply issues, the proposed Project does not constitute a significant impact as defined under CEQA.

Energy Supply Infrastructure Impacts on Joshua Tree National Park. No adverse impacts to JTNP are expected due to the energy supply infrastructure needs of the proposed Project for the following reasons:

- The energy resource supply routes, which will serve the proposed Project site and Townsite (electric lines, underground natural gas lines, and liquid petroleum fuel truck access roads), presently exist and lie outside of the boundaries of JTNP.
- Discussions with representatives of the gas and electric utilities (Southern California Gas Company and SCE) indicate that the existing utility supply infrastructures will not require upgrades to accommodate the additional energy needs of the proposed Project.

Consequently, from the standpoint of energy supply issues, the proposed Project does not constitute a significant impact to JTNP as defined under CEQA.

Impacts on Eagle Crest Energy Company's Hydroelectric Project. No adverse impacts to the ECEC hydroelectric project are expected due to the energy needs of the proposed Project. During operation, the ECEC project will consume approximately 4.81×10^6 MW-hr of electrical energy annually, primarily to pump water into storage during off-peak hours for subsequent release to generate electricity. In comparison, the approximate 8.47×10^3 MW-hr/yr of electrical energy consumed by the proposed Project represents less than 0.2 percent of the annual ECEC electrical energy consumption. Consequently, from the standpoint of energy usage, the proposed Project would not constitute a significant adverse impact upon the ECEC project.

Baseline Fuel Consumption.

Waste Transport, Handling, and Disposal. Operation of conventional Class III MSW disposal landfills is an energy-intensive endeavor, which involves the following, vehicle-related fossil fuel consuming activities:

- Refuse collection
- Transportation to intermediate handling/processing facilities (transfer stations)

- Disposal by truck or rail from transfer stations to the landfill
- Landfill disposal operations (refuse compaction, soil cover placement, grading)

The proposed Project will be primarily a waste-by-rail facility, serving the Counties of Riverside, San Bernardino, Orange, Los Angeles, San Diego, Ventura, and Santa Barbara. Waste will also arrive at the site via transfer truck. For the first three years of operation, waste could be transported to the landfill site by either truck or train from any of the jurisdictions in the seven-county wasteshed.

Fossil fuel consumption estimates for the proposed Project are based on operations at maximum capacity, i.e., 18,000 tpd transported by rail and 2,000 tpd by truck/trailer rigs from transfer stations (see Section 4.4, Air Quality). Because the actual locations of transfer stations are not known at this time, assumptions have been made regarding anticipated one-way waste haul delivery distances. It is assumed that waste arriving at the site by transfer truck will be transported in enclosed trailers that average approximately 20 net tons of waste. A limit of 100 transfer truck round trips per day will be accepted at the site for a total of 2,000 tpd. For the purpose of this analysis, it is assumed that total truck haul distance from a transfer station is 150 round-trip miles per truck (see Section 4.4, Air Quality). Table 4.16-1 summarizes the estimated daily diesel fuel consumption required for specific waste transport, handling, and disposal operations associated with the Proposed action under these conditions.

Table 4.16-1
Estimated Daily Fuel Consumption for Heavy Equipment Operation
Proposed Action

Waste Transport (Rail plus Truck)	30,381 gals/day
Transfer Station Operations	6,045 gals/day
Landfill Handling/Disposal	14,235 gals/day
TOTAL	**50,661 gals/day**

In and of itself, implementation of a project of this magnitude would create a substantial new fuel energy end-use over existing (no project) conditions; 17.8×10^6 gallons of diesel fuel per year or approximately 2.5×10^{12} BTU/yr. This level of energy intensity is due in large measure to the proposed rail-haul operations. Within the SCAB, however, annual on-road mobile source fuel energy usage for 1990 was approximately 7.9×10^{14} BTU, and is projected to increase to 8.3×10^{14} BTU by 2000 (SCAQMD, 1995). Consequently, the proposed Project represents approximately 0.3 percent of the historic 1990 and projected 2000 SCAB mobile source fuel consumption. Therefore, the proposed Project does not represent a substantial increase over baseline fuel consumption conditions and, as such, does not constitute a significant impact as defined under CEQA.

Efficient Use of Energy. Large, regional-scale municipal waste collection, transportation, and disposal is an energy-intensive undertaking. One possible approach to maximize energy end-use efficiency over the lifetime of a landfill, is to use the LFG produced onsite as an energy resource. Due to the desert setting of the proposed Project, as well as the types of

wastes that will be accepted, the moisture content of the waste at the time of placement in the landfill is anticipated to be approximately 21 percent (MRC, 1994). Because of this dry condition, little LFG is expected to be generated; a LFG generation rate averaging approximately 3.3 cubic feet per year per 100 lb of waste over a gas production life of approximately 30 years has been estimated (Hamm, 1990).

For the purposes of this impact analysis, the landfill is assumed to require a net import of electrical power to operate the LFG flare stations until, at least, the potential for onsite electrical generation exceeds usage. At the Project's maximum 20,000 tpd disposal capacity (estimated to occur by operating year 25), annual electrical energy consumption at the Landfill is estimated to be 8,468,000 kW-hr (~2.9 x 10^{10} BTU). Assuming a conservative LFG capture rate of 90 percent, an LFG combustion efficiency of 30 percent, an electrical generating efficiency of 90 percent, and an electrical plant capacity factor of 85 percent, meeting this level of electrical energy demand would require an onsite generating capacity of approximately 0.97 MW; a capacity which could be achieved by operating year 5, under an LFG generation rate of 3.3 cubic feet per year per 100 lb of waste and a daily influx of 8,200 tons of waste.

At some point in the future, when there is sufficient LFG generation (i.e., approximately 2 million to 5 million cubic feet per day), the development of an onsite energy recovery facility, designed to generate and sell electricity, could be considered based on the results of a detailed study of the quality and quantity of LFG produced at the landfill and electricity market conditions at that time. For the proposed project, a cumulative LFG generation rate of 5 million cubic feet per day would be anticipated to occur approximately by year 12, under the above assumptions, at which point an estimated 5.2 megawatts (MW) of electricity could be generated. By year 25, this generating capacity potential could reach approximately 17 MW.

4.16.2.2 Mitigation

No additional mitigation measures beyond those associated with existing design requirements are warranted or required.

4.16.2.3 Significance After Mitigation

The mitigation measures incorporated into the proposed Project design reduce potential energy-related impacts to below the level of significance.

4.16.3 No Action Alternative

4.16.3.1 Impacts

The No Action Alternative would preclude the occurrence of any energy-related potential impacts associated with the proposed Project.

4.16.3.2 Mitigation

No mitigation measures are required for this alternative.

4.16.3.3 Significance After Mitigation

The potential for energy-related impacts is not significant for this alternative.

4.16.4 Reduced Volume of Onsite Disposal Alternative

4.16.4.1 Impacts

The potential impacts under this alternative would be similar to, although somewhat less than those of the Proposed Action. The 16,000-tpd alternative comprises rail shipments of 14,000 tpd and truck hauling of 2,000 tpd, resulting in an approximate 22 percent reduction in packer truck and unit train capacities per day, with a concomitant reduction in fuel consumption relative to the Proposed Action. Vehicle operations at the landfill also would be reduced in proportion to the lowered refuse tonnage received daily. Electrical usage is also reduced under this alternative due to an approximate 20 percent lower power requirement for the LFG flare stations.

A change in landfill volume/configuration would not substantially alter daily operations of the Project. Such a reduction would, however, result in a decrease in fuel consumption, particularly related to rail transport operations over the lifetime of the landfill. Consequently, this alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

4.16.4.2 Mitigation

Mitigation measures would be the same as those associated with the Proposed Action.

4.16.4.3 Significance After Mitigation

The mitigation measures incorporated into the proposed Project would result in a potential for energy-related impacts that is below the threshold of significance for this alternative.

4.16.5 Alternate Road Access Alternative

4.16.5.1 Impacts

The potential impacts under this alternative would be similar to, but greater than those of the Proposed Action because this alternative increases diesel fuel requirements due to a longer distance traveled by truck rigs to the landfill. Other energy-related aspects of this alternative

would be identical to the proposed Project. Consequently, this alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

4.16.5.2 Mitigation

This alternative could require additional mitigation measures related to truck fossil fuel consumption beyond those associated with the Proposed Action.

4.16.5.3 Significance After Mitigation

The mitigation measures incorporated into the proposed Project design could require augmentation to reduce the potential for impacts, associated with this alternative, to levels that are below the threshold of significance.

4.16.6 Rail Access Only Alternative

4.16.6.1 Impacts

The Rail Access Only alternative results in an 18,000-tpd operation. All waste haul by truck-to-landfill fuel consumption (approximately 4,545 gallons per day) would be removed. Vehicle operations at the landfill also would be reduced in proportion to the approximately 10 percent lower refuse tonnage received daily. Electrical usage under this alternative is also less because there is no truck entrance facility, and LFG flare station operations are reduced. In the future, increased fuel consumption may be required to transport Chuckwalla Valley waste to the Coachella Valley if the Desert Center Landfill closes.

The potential impacts under this alternative would be essentially identical, albeit somewhat lessened relative to those of the Proposed Action. A change in landfill volume/configuration would not substantially alter daily operations of the Project. Such a reduction would, however, result in a decrease in fuel consumption over the lifetime of the landfill. Consequently, this alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

4.16.6.2 Mitigation

Mitigation measures would be the same as those associated with the Proposed Action.

4.16.6.3 Significance After Mitigation

The mitigation measures incorporated into the proposed Project design would result in a potential for energy-related impacts which is below the threshold of significance for this alternative.

4.16.7 Landfill on Kaiser Land Only Alternative

4.16.7.1 Impacts

The potential impacts under this alternative would be identical to those of the Proposed Action. Fuel usage for a 10,000-tpd facility will be less than the proposed Project. Because only half as much waste will be landfilled, it is assumed that only two LFG flare stations will be used, instead of the four stations planned under the Proposed action. The life of the landfill will be shortened, resulting in the potential to reach full capacity within approximately 39 years. A change in landfill volume/configuration would not alter daily operations of the Project. Consequently, this alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

4.16.7.2 Mitigation

Mitigation measures would be the same as those associated with the Proposed Action.

4.16.7.3 Significance After Mitigation

The mitigation measures incorporated into the proposed Project design would result in a potential for energy-related impacts which is below the threshold of significance for this alternative.

4.16.8 Landfill Development/No Townsite Development Alternative

4.16.8.1 Impacts

The Landfill Development/No Townsite alternative would preclude the potential for energy impacts associated with an increase in population at the Eagle Mountain Townsite. Elimination of further development of the Townsite would not alter daily operations of the Project, and would be unlikely to result in a major decrease in the number of employees needed to operate the landfill. Consequently, fuel usage will not change, however, electrical energy consumption is estimated to be reduced by about 5 gWhrs per year below that associated with the proposed Project. Consequently, this alternative would not alter the conclusions regarding impacts and mitigation measures associated with the Proposed Action.

4.16.8.2 Mitigation

Mitigation measures would be the same as those associated with the Proposed Action.

4.16.8.3 Significance After Mitigation

The mitigation measures incorporated into the proposed Project design would result in a potential for energy-related impacts which is below the threshold of significance for this alternative.

5.0 Cumulative Impacts

This section addresses potential cumulative impacts to the environment that could be associated with implementation of the proposed Eagle Mountain Landfill and Recycling Center Project (Project) in concert with one or more other past, present, and reasonably foreseeable future actions/projects. Specifically, this section is prepared in accordance with the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The Council on Environmental Quality (CEQ) regulations implementing NEPA do not provide detailed guidelines with respect to the content or format of a cumulative impacts analysis in an EIS. The CEQ regulations, however, define a "cumulative impact" for purposes of NEPA as follows:

> "Cumulative impact is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR §1508.25)."

The CEQA Guidelines, Section 15130, provide more detailed guidance concerning the format and content of the cumulative impacts analysis.

"(a) Cumulative impacts shall be discussed when they are significant.

(b) The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided of the effects attributable to the project alone. The discussion should be guided by the standards of practicality and reasonableness. The following elements are necessary to an adequate discussion of cumulative impacts:

(1) Either:

(A) A list of past, present, and reasonably anticipated future projects producing related or cumulative impacts, including those projects outside the control of the agency, or

(B) A summary of projects contained in an adopted general plan or related planning document which is designed to evaluate regional or area wide conditions. Any such planning document shall be referenced and made available to the public at a location specified by the Lead Agency;

(2) A summary of the expected environmental effects to be produced by those projects with specific reference to additional information stating where that information is available, and

(3) A reasonable analysis of the cumulative impacts of the relevant projects. An EIR shall examine reasonable options for mitigating or avoiding any significant cumulative effects of the proposed project."

The CEQA guidelines refer to "past, present, and reasonably foreseeable future projects," whereas the NEPA regulations refer to "past, present, and reasonably foreseeable future actions." Moreover, the CEQA guidelines require the examination of cumulative impacts only when they are "significant," whereas the NEPA regulations contain no corresponding limitation. In order to satisfy both statutes, this EIS/EIR considers all cumulative impacts—significant and not significant—resulting from both "actions" and "projects."

For purposes of this discussion, other actions/projects that could contribute to cumulative impacts are addressed in the following categories:

- Those actions/projects located within the vicinity of the proposed Eagle Mountain Project. These consist of the proposed Eagle Mountain Project in combination with the Eagle Crest Hydroelectric project, land management programs of the U.S. National Park Service (NPS) within Joshua Tree National Park (JTNP), land management programs of the U.S. Bureau of Land Management (BLM) on surrounding public lands, and other local and privately sponsored actions/projects.

- Other comparable landfill projects in the Southern California desert region, including the proposed Mesquite and Bolo Landfills.

- Other (nonlandfill) actions/projects in the Southern California desert region that could, in combination with the Eagle Mountain Project, result in cumulative impacts.

This cumulative impacts section gives great emphasis to the actions/projects that are likely to cause the most significant cumulative impacts (i.e., actions/projects that would occur relatively close to the Eagle Mountain Project site). This section also provides relatively detailed discussions of the potential cumulative impacts that could be caused by other rail-haul landfills in the Southern California desert region. This discussion responds to concerns that have been raised about the long-term effects of locating several projects of this nature in the desert.

For these categories, this cumulative impacts section focuses primarily on the potential impacts of reasonably foreseeable future actions. The impacts of past and present actions are reflected in the baseline environmental conditions in the Project area, and are discussed in detail in Section 3, Affected Environment, of this EIS/EIR. Together, this section (Section 5) and Section 3 provide a comprehensive discussion of all past, present, and reasonably foreseeable future actions that could cause cumulative impacts.

5.1 San Diego Superior Court Ruling on Previous EIR

As explained in Section 1.2.1, *San Diego Superior Court Cases and Rulings on CEQA Issues*, the San Diego County Superior Court (Court) ruled that the Environmental Impact Report (EIR) previously prepared for the proposed Eagle Mountain Project did not comply with CEQA in that the EIR did not adequately discuss and evaluate potential cumulative impacts of the proposed Eagle Mountain Landfill Project and the proposed Eagle Crest (formerly Eagle Mountain) Hydroelectric Project (Superior Court, July 26, 1994). (Other issues on which the Court ruled are summarized in Section 1.2.1 and Table 1-2.) The court instructed that future environmental documents prepared for the proposed Project:

- Fully analyze the cumulative impacts of the proposed Eagle Mountain Project and petitioner's (Eagle Crest Energy Corporation [ECEC]) hydroelectric project
- Fully analyze the feasibility of the mitigation measures for the proposed Eagle Mountain Project in light of the cumulative impacts analysis (Superior Court, September 1, 1994).

In response to the Court's ruling, the following discussion of cumulative effects addresses:

- The methods used to identify other past, present, and reasonably foreseeable actions/projects that could generate cumulative impacts on the environment
- Assumptions used in analyzing the cumulative impacts of these other actions/projects
- Specific potential cumulative impacts
- Mitigation measures available to the proposed Eagle Mountain Project applicant to reduce, avoid, or otherwise minimize significant cumulative impacts on the environment
- The identification of potential impacts that would be generated by these other actions/projects

5.2 Cumulative Impacts Analysis

This section discusses the general characteristics of the other actions/projects included within the cumulative impacts analysis, in terms of their geographic areas, chronology, duration, and time horizon for potential impacts relative to the proposed Project.

5.2.1 Other Actions/Projects Included in the Cumulative Impacts Analysis

The following criteria were considered in identifying those past, present, and reasonably foreseeable actions/projects that could result in cumulative impacts:

- Actions/projects that have an application for construction and/or operation pending before an agency with permit authority
- Actions/projects that have the potential to generate environmental impacts that, when addressed collectively with the proposed Project, could result in cumulative impacts to the environment
- Actions/projects that are of a similar character, could affect similar environmental resources, or are located in geographic proximity to the proposed Project

5.2.2 Scope of the Cumulative Impacts Analysis

The geographic area addressed in this analysis varies according to the nature and characteristics of each environmental resource. Two geographic areas are defined to categorize this analysis. The first area is the vicinity of the proposed Project and includes Joshua Tree National Park (JTNP) and surrounding federal, state, and private lands of the County of Riverside corresponding generally to the Chuckwalla Valley Land Use Planning Area (see Figure 1-2 in Chapter 1) (County of Riverside, 1992). The second area encompasses a substantial portion of the Southern California desert region, a geographic area corresponding generally to the boundaries of the Southeast Desert Air Basin (SEDAB). (See Figure 3.4-3 in Chapter 3.) This geographic area is used to include a broader range of other actions/projects and environmental resources well beyond the immediate vicinity of the proposed Project.

5.2.3 Timing and Duration of Other Actions/Projects

For each of the other actions/projects addressed in this analysis, the time period in which it would be implemented, including construction and operational phasing, is defined. Information on the timing and duration for the other actions/projects was obtained from applicant proposals, when available. When this information was not available in applicant proposals, and could not otherwise be obtained through reasonable efforts (e.g., direct contact with applicants), professional judgment was used to estimate a reasonable time frame to complete the regulatory review and permit issuance processes needed for implementation of the other projects.

Where a project's life expectancy is greater than the license period allowed by a regulatory agency, as is the case with the Federal Energy Regulatory Commission (FERC) and the proposed ECEC hydroelectric project, the maximum license period is used as an estimate of

project duration. Although subject to future relicensing, the ECEC project could undergo major modifications or environmental enhancements as a result of future FERC environmental review not foreseeable at this time.

5.2.4 Future Time Horizons

Three time horizons have been selected to discuss potential cumulative impacts of the proposed Project and other past, present, and reasonably foreseeable projects. The time horizons consist of:

- Year 1 through Year 5
- Year 6 through Year 50
- Year 51 through Closure

These time horizons were selected because they reflect three distinct periods in which different cumulative effects or project interactions could occur. The period of Year 1 through Year 5 corresponds to the initial construction and operation of the proposed Eagle Mountain Project and the estimated licensing and design period required for the ECEC hydroelectric project. Based on professional judgment and understanding of the current status of the ECEC project, it is not expected that the hydroelectric facility will have completed its ongoing FERC license application review, environmental analysis, FERC license issuance, final engineering design, land and permit acquisition, power purchase agreements, and construction contractor selection for at least 5 years.

Years 6 through 50 correspond to the continued operation of the proposed Eagle Mountain Project and the construction and operation of the ECEC hydroelectric project. Based on a maximum FERC license period of 50 years, this time horizon would coincide generally with the conclusion of the first ECEC license period.

Years 51 through Closure correspond to the continued operation of the proposed Eagle Mountain Project through its approximately 100-year life expectancy. This time horizon would also coincide with a second 50-year FERC license term issued for the ECEC hydroelectric project.

5.2.5 Cumulative Projects Data and Information

Each of the other projects addressed in the cumulative effects analysis is supported by different levels of information, depending on the current status of the particular project. For future projects, this information ranges from a simple project description, identifying its goals and objectives, to a comprehensive environmental review performed in accordance with either NEPA or CEQA provisions.

This analysis uses the level of information available at the time this EIS/EIR document was prepared to describe these other actions/projects and their respective potential impacts on the environment. If sufficient data or information on specific aspects of the action or project

were not available to complete an analysis comparable to those for the other actions/projects evaluated, and reasonable efforts to obtain that information were unsuccessful (as in the case of the ECEC project), professional judgment was used to estimate the potential effects of the ECEC project. In instances where different conclusions could be drawn from the available information, this analysis summarizes the main points of disagreement and explains the reasons for accepting one conclusion rather than another.

5.2.6 Reasonable Forecast Analysis

In accordance with Sections 15144 and 15145 of the CEQA Guidelines, this analysis has assessed potential future cumulative effects where they can be reasonably forecast.

5.3 Methods Used For Identifying Other Past, Present, and Reasonably Foreseeable Actions/Projects

Several methods were used to identify other past, present, and reasonably foreseeable actions/projects that could, in concert with the proposed Eagle Mountain Project, contribute to cumulative impacts on the environment. For actions/projects occurring on lands administered by federal agencies, the agency with primary land management authority identified actions/projects that could potentially contribute to cumulative environmental effects. These agencies included the NPS for lands within JTNP, and the BLM for other California Desert Conservation Area lands in the vicinity of the proposed Eagle Mountain Project. For other actions/projects located on private properties in the vicinity of the proposed Eagle Mountain Landfill, the County Planning Department has determined there are no pending applications or proposals for specific plans.

Other actions/projects were identified by surveying other land management authorities within the Southern California region. These surveys consisted of informal inquiries designed to acquire existing available environmental documentation and project descriptions.

5.4 List of Past, Present, and Reasonably Foreseeable Actions/Projects and Respective Environmental Impacts

As noted in Section 5.2.2, other actions/projects that could contribute to potential cumulative impacts were divided into separate categories to facilitate their analysis and discussion. The following discussion focuses primarily on reasonably foreseeable future actions/projects that could contribute to cumulative impacts on the environment. The impacts of past and present projects are discussed in Section 3 (Affected Environment), and the results of that discussion are reflected in this section.

5.4.1 Other Actions/Projects Within the Vicinity of the Proposed Eagle Mountain Project

Other actions/projects located within the vicinity of the proposed Eagle Mountain Project include the following:

- Eagle Crest hydroelectric project
- Projects planned at Joshua Tree National Park
- Bureau of Land Management projects
- Private projects planned in County of Riverside
- Edom Hill Landfill

5.4.1.1 Proposed Eagle Crest Hydroelectric Project

Background. ECEC (formerly Eagle Mountain Energy Company) has filed an application with FERC for a license to construct and operate a pumped storage hydroelectric power project, proposed to be located on lands within and around the proposed Eagle Mountain Project site, including federally owned lands and portions of Kaiser's Eagle Mountain Mine. The proposed ECEC hydroelectric project would have a 1,000-megawatt electrical generating capacity capable of producing an annual average of 876 to 1,752 gigawatt/hours of electrical energy for sale to southwestern United States public utilities. ECEC is a private (for profit) business entity, joined by AES Corporation, a publicly owned company. According to ECEC, the ECEC/AES business arrangement is a joint venture. Table 5-1 summarizes the major features of the proposed ECEC hydroelectric project. The status and potential impacts of the ECEC project, as defined in ECEC's application to FERC, are summarized in Table 5-2.

ECEC proposes to use the Kaiser-owned Central Pit and East Pit excavations as the water reservoirs for its pumped storage hydroelectric project. These features are shown in Figures 5-1 and 5-2. ECEC's proposed hydroelectric project would generate electrical energy by releasing water stored in the higher elevation Central Pit into the lower elevation East Pit through an underground tunnel. This cascading water would drive turbines, located in a deep underground tunnel bored between the two reservoirs, to generate electrical power. The water would then be pumped from the lower reservoir to the upper reservoir and the power generation cycle repeated.

The ECEC hydroelectric project would generate electricity during peak daytime hours (when a purchasing utility is required to pay high rates for that energy), and later use purchased power to pump the water from the lower to the upper reservoir during off-peak, nighttime hours (when ECEC would pay significantly lower rates for the energy). ECEC proposes to make a profit as a result of the difference in the peak and off-peak rates. According to ECEC's license application filed with FERC in April 1994, the proposed hydroelectric project would be a net user of energy, because the electrical power necessary to pump the water back up from the lower reservoir to the upper reservoir would exceed the amount of power generated by the water flowing from the upper reservoir to the lower reservoir.

Table 5-1
Major Features of the Proposed ECEC Hydroelectric Project

Project Feature	Physical Description	Operation Characteristics
Upper Reservoir	Construct dam embankments of rock and reinforced concrete to maintain a reservoir crest elevation of 2447 feet Mean Sea Level (MSL) within the existing Central Pit of the Eagle Mountain Mine. The reservoir would occupy a maximum 165.0 acres when full containing a volume of 14,200 acre-feet (ac-ft) of water and a minimum 50.8 acres when drawn down. A permanent nonactive storage of 2,300 ac-ft would be retained in the reservoir. Reservoir lining to reduce leakage is likely, although specific details in this regard have not been provided by ECEC.	Reservoir water surface elevations would fluctuate 95 feet on a daily basis during peak power generation and reservoir filling cycles. Typical peak power generation periods would be 9 hours on weekdays while refilling periods would equal 18 hours. This would result in an average drawdown rate of 10.5 feet per hour and an average refill rate of 5.25 feet per hour.
Lower Reservoir	The existing East Pit of the Eagle Mountain Mine would contain proposed water supply requirements of 10,100 ac-ft. Partial lining of the reservoir zone is proposed to reduce leakage from pit area. At maximum volume, reservoir would occupy 106.6 acres. At minimum volume, nonactive storage would occupy 54.5 acres.	Reservoir water surface elevations would fluctuate 121 feet on a daily basis during peak power generation and reservoir filling cycles. Typical peak power generation periods would be 9 hours on weekdays while drawdown periods would equal 18 hours. This would result in an average drawdown rate of 6.7 feet per hour and an average refill rate of 13.4 feet per hour.
Spillways	None proposed	Not Applicable
Power Waterways	Water would be conveyed from the Upper Reservoir to the Lower Reservoir by a 29-foot-diameter underground tunnel. The tunnels would extend a total of 5,900 feet horizontally and 1,300 vertically before entering three lined penstocks. The penstocks would extend about 700 feet horizontally to the turbine inlet at the powerhouse. From the powerhouse, three tailrace tunnels would extend 3000 feet horizontally to a main 29-foot-diameter tailrace tunnel. This tunnel would extend 6,800 feet to the inlet of the Lower Reservoir.	Water would be initially pumped into the Upper Reservoir and retained for discharge during peak energy periods. When released, the water would travel through the tunnel/pipeline system powerhouse turbines discharging to the Lower Reservoir. During nonpeak periods, water would be pumped from the Lower Reservoir through the tunnel/pipeline system back into the Upper Reservoir. Additional water would be added from offsite sources as makeup to compensate for leakage and evaporative losses.

Table 5-1
Major Features of the Proposed ECEC Hydroelectric Project

Powerhouse	An underground powerhouse will be installed in a cavern about 85 feet wide by 149 feet high by 361 feet long. The powerhouse will contain the turbine/pump equipment needed for power production and reservoir refilling.	The three turbine/pump units will have a combined capacity of 1,000 MW.
Access Tunnel	A 28-foot-by-28 foot vehicle access tunnel would be constructed to the underground powerhouse. The tunnel would be about 6,200 in length. Power cable connecting the turbine/pump units with surface switchyard equipment would be located in the access tunnel.	Not Applicable.
Other Structures	A 500-foot-by-800 foot gravel surfaced area would be designated for switchyard equipment. This secured area will contain transformers and switches necessary for safe project operations.	Not Applicable.
Water Supply and Conveyance Pipelines	Three wells would be installed to extract groundwater from the Chuckwalla Valley to initially fill the Upper Project reservoir and provide make-up water to the system. Only one well is proposed to remain operational after initial filling for providing make-up water supplies. A 10-inch to 15-inch Pipeline connecting the wells with the Lower Reservoir would be constructed. The total length of pipe required to make these connections is about 99,200 feet.	Well No. 1 would have a capacity of 2,300 gallons per minute (gpm) Wells No. 2 and 3 would each have a capacity of 1,750 gpm.
Visitor Facilities	A visitor overlook facility is proposed.	Not Applicable.
Transmission Lines	A single-circuit 500 kilovolt (kV) transmission line connecting the proposed switchyard with Southern California Edison existing Dever's substation, near Palm Springs, is proposed. The length of the transmission line is about 83 miles.	Not Applicable.

Table 5-2
Status and Potential Impacts of the Proposed ECEC Hydroelectric Project
(Based on Information Provided in FERC Application)

Status

Environmental Documentation: Applicant Environmental Report filed with FERC as part of Initial Application; EIR/EIS pending preparation

Permits/Approvals: License application pending before FERC; FERC has not yet deemed the application ready for review
Clean Water Act Section 401 Water Quality Certification applied for; California State Water Resource Control Board denied certification pending environmental analysis

Timeframe: Estimated Licensing and Environmental Review = 3 to 5 years; Project final design, permit acquisition, and additional agreements = 2 to 3 years; Project construction = 3 years; Life expectancy = 50 to 100 years

Potential Environmental Impact[1]	Cumulative Impact
Water Quality and Use	Yes
Potential impact to surface waters resulting from stormwater runoff events.	
Potential impact to groundwater quality resulting from accidental spills of grease, fuels, and solvents.	
Potential impact to regional groundwater reserves resulting from initial reservoir filling, totaling about 15,000 ac-ft, and annual reservoir make-up requirements of about 2,300 ac-ft per year.	
Public Health/Safety	
None	
Traffic/Transportation	
None	
Air Quality	Yes
Potential impact to regional air quality resulting from dust (PM10) emissions from construction vehicles and equipment.	
Potential temporary impact due to emissions of NOx and ROG from construction vehicles and equipment.	
Potential air quality benefits resulting form displacement of existing thermal energy sources with clean and renewable peak energy supply.	
Potential impact to air quality resulting from increased energy demand of project and need for increased nonpeak energy production.	
Land Use	Yes
Potential conflict with proposed landfill operations on privately owned lands.	
Potential conflict with Joshua Tree National Park and BLM management policies	
Drainage/Flooding	
None. Potential impact from breach of dam on upper reservoir.	
Biological Resources	Yes
Potential impact to desert tortoise habitat and individuals during project construction.	
Potential impact to desert tortoise populations due to increased presence of predators (ravens).	
Potential impact to Nelson bighorn sheep resulting from presence of surface water bodies effect on flows to Buzzard's Springs.	
Potential impact to Alverson foxtail cactus, California barrel cactus, and Orocopia sage resulting from water conveyance pipeline and transmission line construction.	
Potential impact from general habitat degradation resulting from project construction noise.	
Potential impact to pupfish habitat in Salt Creek resulting from lowering of local groundwater table.	
Growth/Socioeconomics	Yes
Create 414 temporary jobs and 24 long-term jobs.	
Geology/Mineral Resources	
Potential impact and hazard to Project operations resulting from mass movement of unstable slope zones.	
Visual/Recreation	Yes
Potential impact resulting from transmission line installation.	
Potential short-term impact resulting from installation of surface water conveyance pipeline.	
Wilderness	
None.	
Utilities/Services	
None.	
Noise	
Potential impact to local wildlife habitat resulting from project construction noise.	

Table 5-2 Status and Potential Impacts of the Proposed ECEC Hydroelectric Project (Based on Information Provided in FERC Application)	
Cultural Resources Potential impact to cultural and prehistoric resources located along the proposed transmission line and water conveyance pipeline route. **Energy** Average annual Project operations will produce 876 to 1,752 gigawatt/hours of peak energy. Potential offsite impact resulting from net energy demand and need for additional thermal energy-produced electric power, totaling from 434 to 921 gigawatts per year. Initial reservoir filling would consume about 33 gigawatt/hours of energy while annual make-up water would consume from 3.3 to 4.4. gigawatt/hours of energy.	Unknown
[1] Determination of significance made by ECEC as documented in Eagle Cost Energy Corporation (ECEC, 1994)	

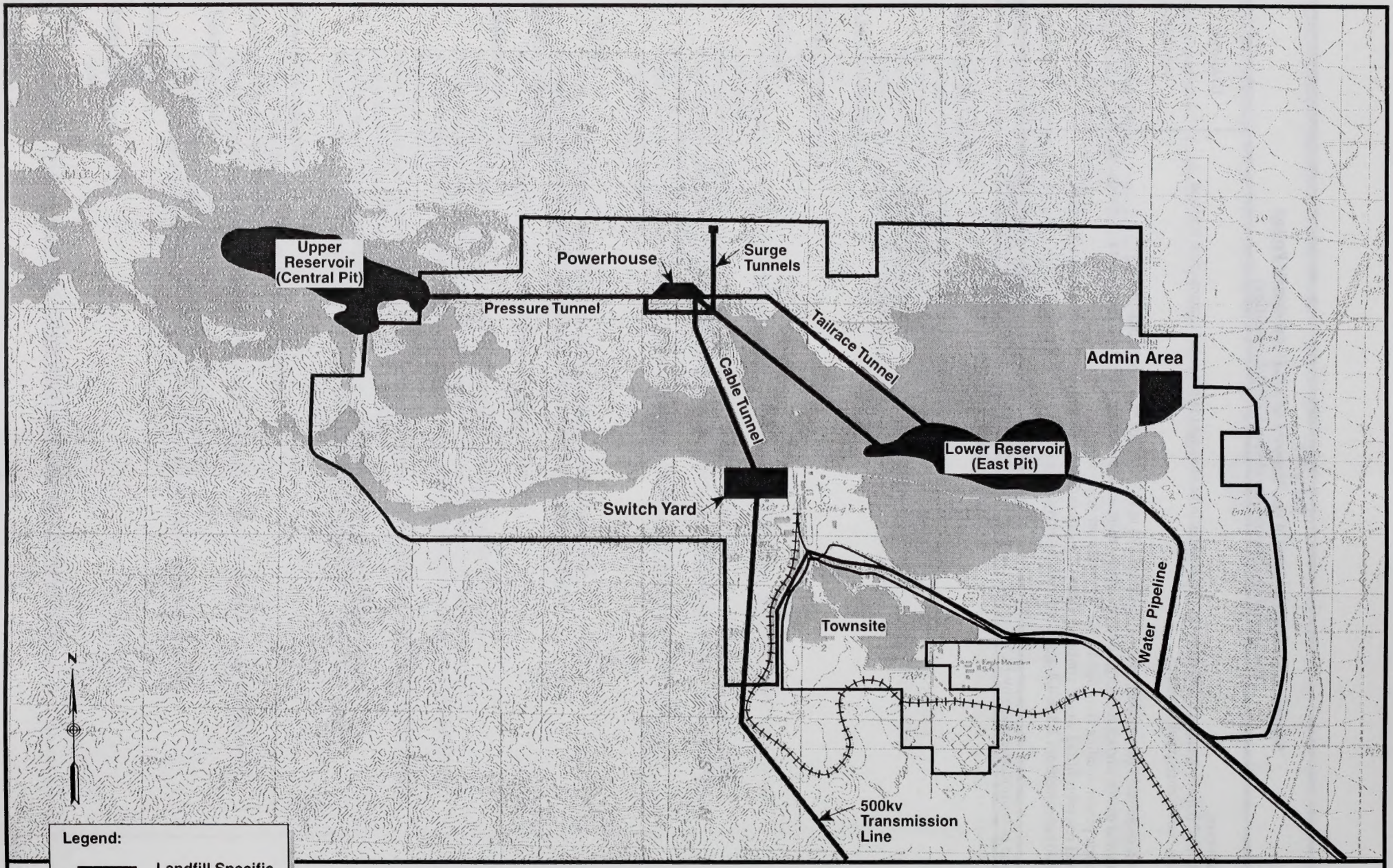
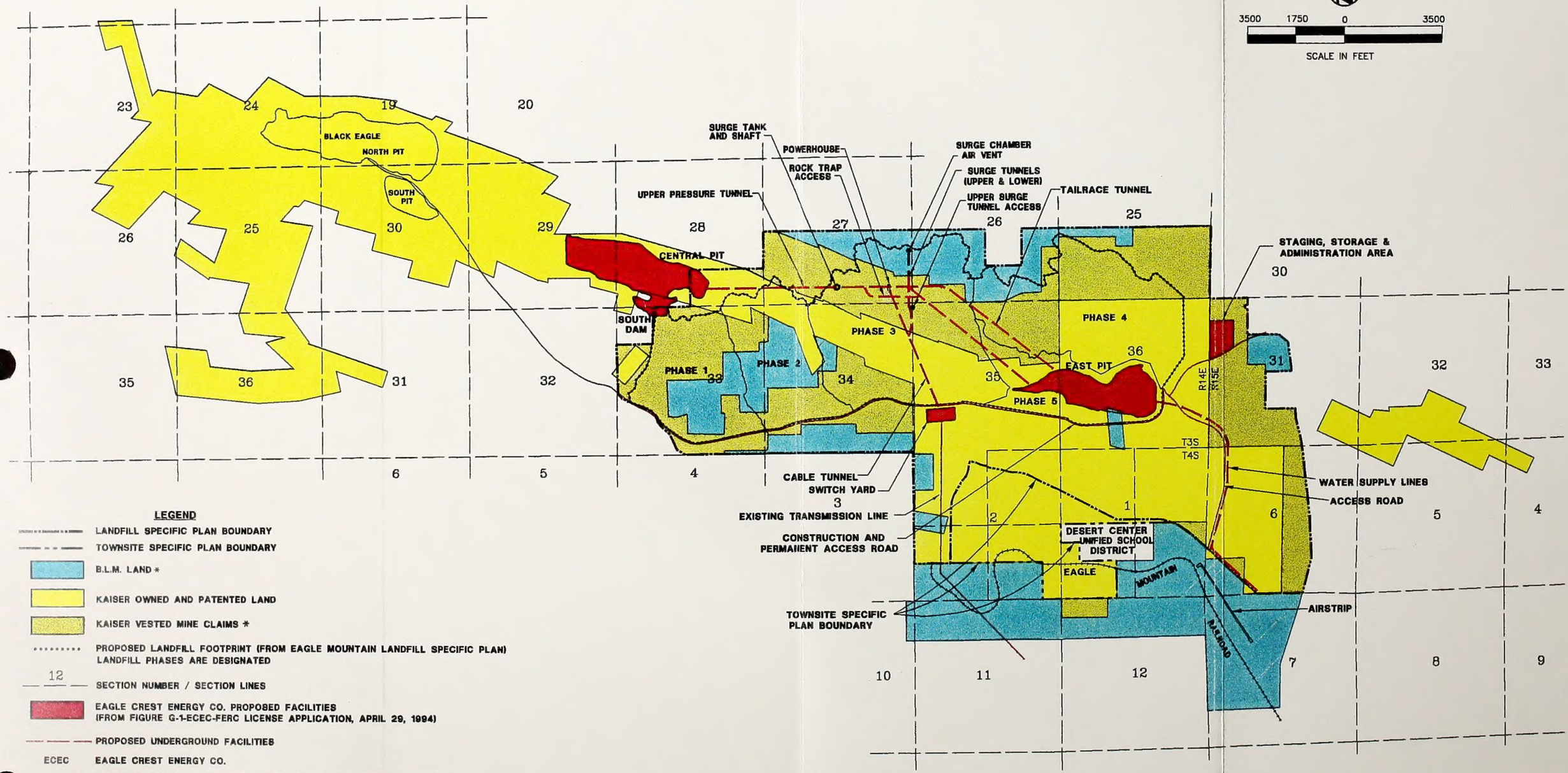


Figure 5-1
Proposed Eagle Crest Energy Company Hydroelectric Project
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL



LEGEND

- LANDFILL SPECIFIC PLAN BOUNDARY
- TOWNSITE SPECIFIC PLAN BOUNDARY
- B.L.M. LAND *
- KAISER OWNED AND PATENTED LAND
- KAISER VESTED MINE CLAIMS *
- PROPOSED LANDFILL FOOTPRINT (FROM EAGLE MOUNTAIN LANDFILL SPECIFIC PLAN) LANDFILL PHASES ARE DESIGNATED
- 12 SECTION NUMBER / SECTION LINES
- EAGLE CREST ENERGY CO. PROPOSED FACILITIES (FROM FIGURE G-1-ECEC-FERC LICENSE APPLICATION, APRIL 29, 1994)
- PROPOSED UNDERGROUND FACILITIES
- ECEC EAGLE CREST ENERGY CO.
- * EXCHANGE LANDS - PROPOSED FOR TRANSFER TO KAISER IN PROPOSED B.L.M./KAISER LAND EXCHANGE

CENTRAL PIT MAX. WATER LEVEL 2435 FT.
EAST PIT MAX. WATER LEVEL 1031 FT.

NOTE: EACH SECTION REPRESENTS APPROXIMATELY ONE SQUARE MILE

ENGINEERING ASSOCIATES
Mail P.O. Box 6087 : 92412
Phone (909)884-8804 FAX (909)889-8143
225 East Airport Drive, San Bernardino, California

OVERLAY OF EAGLE MOUNTAIN PROJECT & ECEC HYDROELECTRIC PROJECT

DATE: JANUARY, 1996

FIGURE 5-2

The lands comprising the two mining pits that ECEC proposes to fill with water currently are owned by Kaiser or subject to Kaiser-owned mining claims. The lower elevation pit (East Pit) is the same pit that is leased to the Mine Reclamation Corporation (MRC) by Kaiser for use in the proposed Eagle Mountain Project. According to ECEC, if FERC issues a license to ECEC for the hydroelectric project under Section 21 of the Federal Power Act (16 U.S.C. § 814), ECEC may be able to use the power of eminent domain to acquire these Kaiser-owned lands by condemnation.

According to ECEC's license application, approximately 14,200 ac-ft of water will be required to initially fill the lower reservoir, and additional water supplies (about 2,300 ac-ft/yr) will be required to operate the hydroelectric project and replenish water lost through evaporation or seepage. ECEC intends to obtain its water from groundwater in the Chuckwalla Valley. Because the Federal Power Act (FPA) does not authorize the acquisition of a water source by eminent domain, ECEC intends to acquire water rights from landowners in the area. Kaiser has leased its interest in the Eagle Mountain Project site to MRC (including the East Pit) and has informed ECEC that it will not negotiate with ECEC for the acquisition of Kaiser lands or water rights.

Eagle Mountain Project and the ECEC Hydroelectric Project—Procedural History.

FERC Proceedings; County of Riverside Opposition to ECEC Hydroelectric Project. In 1989, MRC and Kaiser initiated proceedings with the County of Riverside (County), for the necessary land use approvals for a landfill project. MRC and Kaiser also initiated proceedings with the BLM for a land exchange and rights-of-way for a landfill project. Pursuant to NEPA requirements (42 U.S.C. § 4321 *et seq.*) and CEQA requirements (California Public Resources Code § 21000 *et seq.*), the BLM and the County, as co-lead agencies, prepared a joint EIS/EIR to analyze the potential environmental impacts of the landfill project. The Draft EIS/EIR was published and circulated in June 1991, and the Final EIS/EIR was published and circulated in June 1992.

On January 31, 1991, ECEC filed an application with FERC for a preliminary permit to study the feasibility of its proposed pumped storage hydroelectric project to be located within and around the proposed Eagle Mountain Landfill site. (A preliminary permit is a type of permit from FERC for which a person or entity applies to explore the feasibility of establishing a hydroelectric project at a specific location. The purpose of such a permit is to allow the applicant sufficient time [i.e., a period not to exceed 3 years] to conduct studies to assess the feasibility of the hydroelectric project.) (16 U.S.C. §797 (f); 798; 18 CFR §4.80) FERC issued the preliminary permit on May 2, 1991. FERC's issuance of the preliminary permit did not grant ECEC an approval of its proposed hydroelectric project nor any rights with respect to private lands owned by Kaiser. It did, however, give ECEC priority over any potential competing hydroelectric project proposals on any public lands included within the scope of ECEC's preliminary permit application.

The ECEC preliminary permit application included some of the BLM-administered lands that had previously been offered by the BLM for conveyance to Kaiser as part of the proposed

BLM/Kaiser land exchange. In issuing the preliminary permit, FERC reserved, for power purposes, pursuant to Section 24 of the FPA (16 U.S.C. § 818), all of the public lands that were identified in ECEC's permit application, which FERC determined included a portion of the BLM-administered lands proposed to be conveyed to Kaiser as part of the BLM/Kaiser land exchange. FERC also determined that these BLM exchange lands could not be disposed of by BLM, because they were reserved by FERC for power purposes under the FPA Section 24, notwithstanding the BLM's assertion that these lands had been segregated for the land exchange by BLM prior to FERC's issuance of ECEC's preliminary permit. BLM, Kaiser, and MRC disputed the legality of FERC's reservation of the BLM exchange lands from entry, location or other disposal under FPA Section 24, and contended that the BLM's previous segregation of the lands for the BLM/Kaiser land exchange precluded a FPA Section 24 reservation by FERC.

Prior to FERC's issuance of ECEC's preliminary permit in May 1991, Kaiser, MRC, and the County had intervened in the FERC proceeding and requested that FERC dismiss ECEC's application for the preliminary permit and hold a hearing on the matter. The Metropolitan Water District of Southern California (MWD) also intervened in that proceeding. After FERC issued ECEC's preliminary permit in May 1991, Kaiser, MRC, and the County requested a rehearing of FERC's decision. The primary reasons for the objections were that ECEC did not own any of the land it sought to use and had failed to identify a source of water for a hydroelectric project in the arid desert climate.

FERC ultimately denied the request for rehearing in January 1993. In February 1993, Kaiser and MRC filed a Petition for Review in the U.S. Court of Appeals, District of Columbia Circuit, seeking to overturn the FERC decision. The County did not join in that appeal. In August 1994, the Court of Appeals ruled that FERC had not been arbitrary or capricious in denying the requests of Kaiser and MRC to dismiss the ECEC preliminary permit application, and the litigation concerning the issuance of the preliminary permit to ECEC by FERC was terminated.

On April 29, 1994, ECEC filed a license application for the hydroelectric project with FERC. The license application is discussed in more detail below ("ECEC's Hydroelectric Project Status"). In its license application, ECEC identified fewer than 50 acres of BLM exchange lands (i.e., lands proposed to be conveyed by the BLM to Kaiser) that ECEC was proposing to use for its project.

In January 1995, BLM filed with FERC a formal "Request to Vacate" reservation under FPA Section 24. BLM requested that FERC remove its FPA Section 24 reservation on all of the BLM exchange lands except for the acreage that had been identified in ECEC's license application as necessary for ECEC's proposed pumped storage hydroelectric project. BLM further proposed that the BLM/Kaiser land exchange could go forward either: (1) with a reservation under FPA Section 24 being impressed in the patent from the U.S. (which would allow ECEC's hydroelectric project to proceed without compensation to Kaiser or MRC, or (2) excluding the lands encumbered by ECEC's license application.

In March 1995, FERC granted the BLM's request by vacating all portions of the FPA Section 24 reservation lying outside ECEC's license application boundary in accordance with the way in which that boundary was depicted in Exhibit G-1 to ECEC's April 1994 license application.

On February 14, 1996, Kaiser filed with the BLM an Application for No Injury Determination pursuant to 16 U.S.C. § 818 (Section 24 of the FPA) and 18 C.F.R. § 25.1, relating to the BLM-administered parcels that are both within the boundaries of ECEC's proposed hydropower facility and within the boundaries of the proposed Project and land exchange (FERC-reserved BLM parcels). According to Kaiser's Application, Section 24 of the FPA authorizes the BLM to conditionally transfer any BLM-administered lands that have been reserved by FERC for power purposes, provided that FERC determines that the value of such lands for use as power sites will not be injured or destroyed for future power development by such conditional transfer. The condition on the transfer would be in the form of a reservation in the transferring patent reserving the rights of the United States and its licensees for power purposes. In this application, Kaiser requested that the BLM, pursuant to Section 24 of the FPA, request from FERC:

1. A determination from FERC that the value of the lands subject to the exchange would not be destroyed or injured for purposes of power development if they were included in the exchange and transferred to Kaiser subject to the reservation under Section 24 of the Federal Power Act

2. FERC's concurrence in the transfer of those parcels if the BLM issues a new or supplemental Record of Decision approving the BLM/Kaiser land exchange.

On April 30, 1996, the BLM submitted to FERC a formal Request for No-Injury Determination Under Federal Power Act Section 24, both independently on its own behalf and in response to Kaiser's previous Application to the BLM. The BLM, as did Kaiser, requested that FERC make a no-injury determination for the lands proposed to be conveyed by the BLM to Kaiser that are within the boundaries of the ECEC hydropower proposal, and stated that the ability to use the subject lands for power development purposes subsequent to conveyance would be protected by a reservation in the patent. On June 7, 1996, FERC granted the BLM's Request for a No Injury Determination. In its determination, FERC stated that the power value of the lands would not be injured or destroyed for purposes of power development if conveyed by the BLM to Kaiser.

ECEC's licensing proceeding (Project No. 11080) at FERC is ongoing. Kaiser, MRC, NPS, and the California State Water Resources Control Board (SWRCB) have intervened in the licensing proceeding. The County of Riverside has not requested intervention in ECEC's licensing proceeding.

Previous EIS/EIR for the Eagle Mountain Landfill and Recycling Center. As described above and in Chapter 1 of this document, in June 1991, the original Draft EIS/EIR prepared for the Eagle Mountain Landfill Project was published and circulated to a variety of federal,

state, and local agencies and made available to the public for review and comment. (See Cal. Pub. Res. Code §21091; 40 CFR §§1501.1(a), 1502.9.) The Final EIS/EIR was published and circulated for comment in June 1992, pursuant to NEPA and CEQA public notice requirements. On November 3, 1992, the County of Riverside Board of Supervisors certified the EIR as adequate and in compliance with CEQA.

ECEC Challenge to Approvals of the Previous EIR. In December 1992, ECEC filed a lawsuit in San Diego County Superior Court challenging the adequacy of the previous EIR's discussion of the ECEC hydroelectric proposal. ECEC contended that the EIR should have undertaken a more thorough analysis of the hydroelectric proposal's potential cumulative impacts in comparison to the proposed landfill Project. Both the Draft and Final EIS/EIRs had concluded that the ECEC hydroelectric project was remote and speculative, given the then-early stages of the FERC permitting and licensing process. As a result, the Final EIS/EIR did not determine and analyze the potential cumulative impacts that might result from the construction and operation of both the proposed Project and the ECEC hydroelectric project. The Court ruled that there was not sufficient evidence in the record to support the EIR's finding that the ECEC proposal was remote and speculative, and further held that the County of Riverside should have stated in the EIR that it had joined with Kaiser and MRC to intervene before FERC in opposition to the then-pending ECEC preliminary permit application proceedings.

ECEC Challenge to BLM's Record of Decision. On October 20, 1993, the BLM issued its Record of Decision (ROD) approving the EIS and the BLM/Kaiser land exchange and rights-of-way. Subsequently, ECEC filed an appeal of the BLM's action with the United States Department of the Interior Board of Land Appeals (IBLA). After the Superior Court issued its decision invalidating the previous EIR, the County of Riverside rescinded its previous project approvals and determined that a new EIR should be prepared. The BLM then requested and received a remand of the case from the IBLA in order to join the County in undertaking further environmental review.

ECEC Hydroelectric Project Status. The current status of the ECEC hydroelectric project is as follows:

- The ECEC license application is still pending before FERC, and the application has not yet been designated as "Ready for Environmental Review."

- FERC has determined that ECEC must obtain a water quality certification pursuant to Section 401 of the federal Clean Water Act.

- ECEC must prepare an EIS in compliance with NEPA for FERC and an EIR in compliance with CEQA for State Water Resources Control Board (SWRCB) 401 certification.

- ECEC's request for a 401 certification was denied on April 19, 1995, by SWRCB without prejudice for refiling.

- The SWRCB on May 26, 1995, acting upon a petition for reconsideration filed by ECEC, agreed to hold the consideration of 401 certification in abeyance for up to 2 years.

- ECEC must also apply to the BLM for transmission line rights-of-way. (As of the date of this EIS/EIR, applications have not yet been submitted.)

- The schedule for the ECEC hydroelectric project Draft EIS/EIR is unknown.

As it has been proposed, ECEC's hydroelectric project would conflict with the proposed Eagle Mountain Project, because ECEC's proposed reservoirs would encroach slightly into the Phase 1 and substantially into the Phase 5 areas of the landfill. This EIS/EIR analyzes the potential cumulative impacts of constructing and operating both the proposed Project and the hydroelectric project concurrently.

5.4.1.2 National Park Service—Joshua Tree National Park

The NPS has identified a series of actions and projects as part of its recently adopted *General Management Plan* (NPS, 1995) and its amended *Management Plan for Cultural and Natural Resources* (NPS, 1993). The purpose of these projects or actions is to assist in achieving JTNP management goals and purposes. These management goals, as discussed in Section 3.11.7.3 of this EIS/EIR, are intended to guide the natural and cultural resource management, visitor use, general park development, park administration, and operations of JTNP for the next 10 to 15 years. Table 5-3 lists the projects proposed by NPS as part of its *General Management Plan.*

The programs and projects described in *the Management Plan For Cultural and Natural Project Resources* (NPS, 1993) range from administrative actions, studies, resource monitoring efforts, program staffing and management, to the establishment and upgrading of buildings, storage facilities, and environmental restoration. For the most part, these actions would not contribute to impacts on the environment and are categorically exempt from the requirements of NEPA; however, several projects have the potential for environmental impacts. As shown in Table 5-4, five projects could have the potential to generate adverse environmental impacts from a list of 107 planned NPS activities. Table 5-5 summarizes the potential cumulative impacts to park resources, as documented in the General Management Plan for JTNP (NPS, 1995).

5.4.1.3 Bureau of Land Management Projects

Public lands located within the vicinity of the proposed Eagle Mountain Project are managed for a variety of uses by the BLM in accordance with provisions of the Federal Land Policy

Table 5-3
Projects Proposed by National Park Service as part of the Joshua Tree National Park General Management Plan

Project	Description	Timing
Management Zoning	Rezone all park lands into the following categories: Natural zone - 557,364 acres; Cultural zone - 180 acres; Development zone - 3,411 acres; Additional lands added by 1994 legislation to be addressed in the Backcountry and Wilderness Management Plan	Ongoing. Implemented with adoption of General Management Plan.
Backcountry and Wilderness Management	Evaluate condition and status of additional backcountry and wilderness land. Remove inappropriate development and reclaim lands. Implement program to acquire private inholdings from willing sellers. Ban use of climbing bolts in designated wilderness until completion of future studies. Pursue cooperative agreements to protect ecological units that extend beyond park boundaries. Install signage and increase enforcement activities.	Future activity pending completion of Backcountry and Wilderness Management Plan
Resources Management	Increase inventory, monitoring and research of natural and cultural resources.	Ongoing.
Visitor Use	Provide road, trail, and facility improvements to accommodate future increases in visitor use. Anticipated usage could increase by 300 percent or up to 4 million visitors annually.	Future activities to be implemented as funding becomes available.
Roads and Circulation	Improve existing road system. Improve about 43 miles of roadway. Expand existing parking capacity by about 50 percent or up to 732 cars and 72 RV at one time.	Future activities to be implemented as funding becomes available.
Operations	Install housing facilities to accommodate volunteers at select sites. Install new park operations complex at headquarters. Expand administrative offices at select locations and entrances. Upgrade utilities as required.	Future activities to be implemented as funding becomes available.

Table 5-3
Potential Impacts of Projects Proposed by National Park Service as part of the Joshua Tree National Park General Management Plan

Project	Description	Potential Environmental Impact[1]	Potential Cumulative Impact
Management Zoning	Rezone all park lands into the following categories: Natural zone - 557,364 acres; Cultural zone - 180 acres; Development zone - 3,411 acres; Additional lands added by 1994 legislation to be addressed in the Backcountry and Wilderness Management Plan	No adverse impact.	
Backcountry and Wilderness Management	Evaluate condition and status of additional backcountry and wilderness land. Remove inappropriate development and reclaim lands. Implement program to acquire private inholdings from willing sellers. Ban use of climbing bolts in designated wilderness until completion of future studies. Pursue cooperative agreements to protect ecological units that extend beyond park boundaries. Install signage and increase enforcement activities.	No adverse impact.	
Resources Management	Increase inventory, monitoring and research of natural and cultural resources.	No adverse impact.	
Visitor Use	Provide road, trail, and facility improvements to accommodate future increases in visitor use. Anticipated usage could increase by 300 percent or up to 4 million visitors annually.	No significant adverse impact to air quality resulting from increased vehicle air emissions and fugitive dust. Potential significant impact on cultural resources resulting from future visitor use.	Yes
Roads and Circulation	Improve existing road system. Improve about 43 miles of roadway. Expand existing parking capacity by about 50 percent or up to 732 cars and 72 RV at one time.	No significant adverse impact resulting from disturbance to 93 acres of reconstructed roadways and 22.5 acres of parking and day-use facilities. No significant effect to visual resources resulting from roadway and facility development.	
Operations	Install housing facilities to accommodate volunteers at select sites. Install new park operations complex at headquarters. Expand administrative offices at select locations and entrances. Upgrade utilities as required.	No significant adverse impact resulting from disturbance to 2.5 acres of park administrative facilities. No significant effect to visual resources resulting from development of administrative facilities.	

[1] Determination of impact significance made by NPS as documented in *General Management Plan Development Concept Plan Environmental Impact Statement* (NPS, 1995)

Table 5-4 National Park Service Actions Proposed as part of the Management Plan for Cultural and Natural Resources	
Project	**Description**
Build Museum Collection Facility	A 3,600-square-foot facility designed to house museum storage area, research work area, offices, laboratory, library and sanitary facilities. The project may be subject to NEPA and compliance with Section 106 of the National Historic Protection Act.
Rehabilitate Roads in Wilderness Areas	About 104 miles of roads, currently closed to public use, would be removed and lands rehabilitated. The contents of specific rehabilitation plans would be site-specific in accordance with existing and proposed environmental management objectives. The projects may be subject to NEPA and compliance with Section 106 of the National Historic Protection Act.
Rehabilitate Borrow Pits	Five soil borrow pits remaining from past construction projects would be recontoured and vegetated to be consistent with surrounding environment. The projects may be subject to NEPA and compliance with Section 106 of the National Historic Protection Act.
Rehabilitate Acquired Inholdings	About 150 private inholdings are present in the Park. As acquired, the lands, where modified, would be rehabilitated to a more natural condition. The projects may be subject to NEPA and compliance with Section 106 of the National Historic Protection Act.
Eradicate Non-Native Aquatic Wildlife	Several seeps and springs, occupying about 15 to 20 acres have been colonized by non-native fish and waterfowl. The project would use chemical treatments to eradicate the non-native fish species, while live-trapping is the preferred method to remove non-native waterfowl. The project may be subject to NEPA.

Table 5-5
Potential Impacts of National Park Service Actions Proposed as Documented in the General Management Plan EIS for Joshua Tree National Park (May 1995)

Project	Potential Environmental Impact	Potential Cumulative Impact[1]
Build Museum Collection Facility	**Biological** Potential impacts on local vegetation and wildlife habitat. **Cultural** Potential impact on cultural resources.	None
Rehabilitate Roads in Wilderness Areas	**Biological** Potential impacts on local vegetation and wildlife habitat. **Cultural** Potential impact on cultural resources.	None
Rehabilitate Borrow Pits	**Biological** Potential impacts on local vegetation and wildlife habitat. **Cultural** Potential impact on cultural resources.	None
Rehabilitate Acquired Inholdings	**Biological** Potential impacts on local vegetation and wildlife habitat. **Cultural** Potential impact on cultural resources.	None
Eradicate Non-Native Aquatic Wildlife	**Biological** Potential impacts on local native aquatic and populations.	None

1. Source: General Management Plan for Joshua Tree National Park, EIS, NPS 1995.

and Management Act (FLPMA) of 1976 and, more specifically, with the guidelines of the California Desert Conservation Area Plan (BLM, 1980 and 1988). Sections 3.5.3.1 and 3.11.6.1 of this EIS/EIR discusses the provisions of the California Desert Conservation Area Plan. The land management classifications were recently modified with passage of the California Desert Protection Act of 1994 (P.L. 103-433, 1994), which withdrew specific public lands as wilderness areas or conveyed management of lands from the BLM to the NPS (The Desert Protection Act is discussed in detail in Section 3.11.6.5.) Except for the other proposed regional landfills, which are discussed in detail in this section, there are no other projects currently proposed on federal public lands that would contribute to cumulative impacts on the environment (personal communication, Richard Hunn/CH2M HILL, with Joan Oxendine/BLM, 1995).

5.4.1.4 County of Riverside Private Projects

Projects located on unincorporated private lands are within the regulatory authority of the County of Riverside. Past, present, and future projects are approved by the County in accordance with provisions and requirements consistent with the goals and policies established in the Riverside County Comprehensive General Plan (County of Riverside, 1992). The Chuckwalla Valley Land Use Planning Area (CVLUPA) encompasses approximately 3,629 square miles in the easternmost portion of the County. This area includes JTNP on its western border and extends to the San Bernardino County line to the north, the Imperial County line to the south, and the Arizona border to the east.

The CVLUPA contains a substantial amount of federal lands managed by the NPS and the BLM. Because of its resource management objectives to retain these lands as open space, the County also retains this land use objective. The population residing in the CVLUPA totals about 10,500, a figure that remains consistent with the population estimated in the 1980 census. This population is the least dense of the 12 land use planning areas in the County (County of Riverside, 1992).

Only in the communities of Desert Center, Lake Tamarisk, Eagle Mountain Townsite, and Palo Verde Valley (i.e., Blythe area) has development of an urban or commercial character occurred (County of Riverside, 1992). Within these communities, only Palo Verde Valley has experienced substantial urban development, including the incorporated City of Blythe and the unincorporated communities of Nicholl's Warm Springs, East Blythe, and Ripley. The other communities comprise either agriculture or tourist/recreational services and development. At present, there are no identified projects within the land management authority of the County being proposed that have the potential to create or result in cumulatively significant impacts (Personal communication, Richard Hunn/CH2M HILL, with David Mares/County of Riverside Planning Department, 1995).

The Edom Hill Landfill, located near Cathedral City in the Coachella Valley of the County of Riverside, is an existing Class III landfill operated by the Riverside County Waste Resources Management District (RCWRMD). The 640-acre property is currently leased from the BLM, which first leased the land as a disposal site on April 27, 1964, and then renewed the lease on

April 27, 1984. The County of Riverside opened the landfill on June 26, 1967. The facility presently is permitted to receive up to 1,200 tons of waste per day.

In an effort to provide more long-term refuse disposal capacity for the Coachella Valley, RCWRMD has proposed to revise Edom Hill Landfill's Solid Waste Facilities Permit (SWFP) to vertically expand the landfill and allow additional waste from the Coachella Landfill to be diverted to this facility upon closure. An Environmental Assessment (EA) has been prepared (October 20, 1995) that evaluates the potential impacts this proposed expansion could have on the environment (RCWRMD, 1995).

RCWRMD is currently negotiating with the BLM to purchase the 640-acre parcel. Edom Hill's current SWFP allows for landfilling on 400 of the 640 acres, whereas federal regulations, known as Subtitle D, define the landfill footprint as 148 acres. Revisions sought to the current SWFP would expand capacity to a daily maximum of 2,613 tons per day (tpd), with an additional anticipated closure date of 2003.

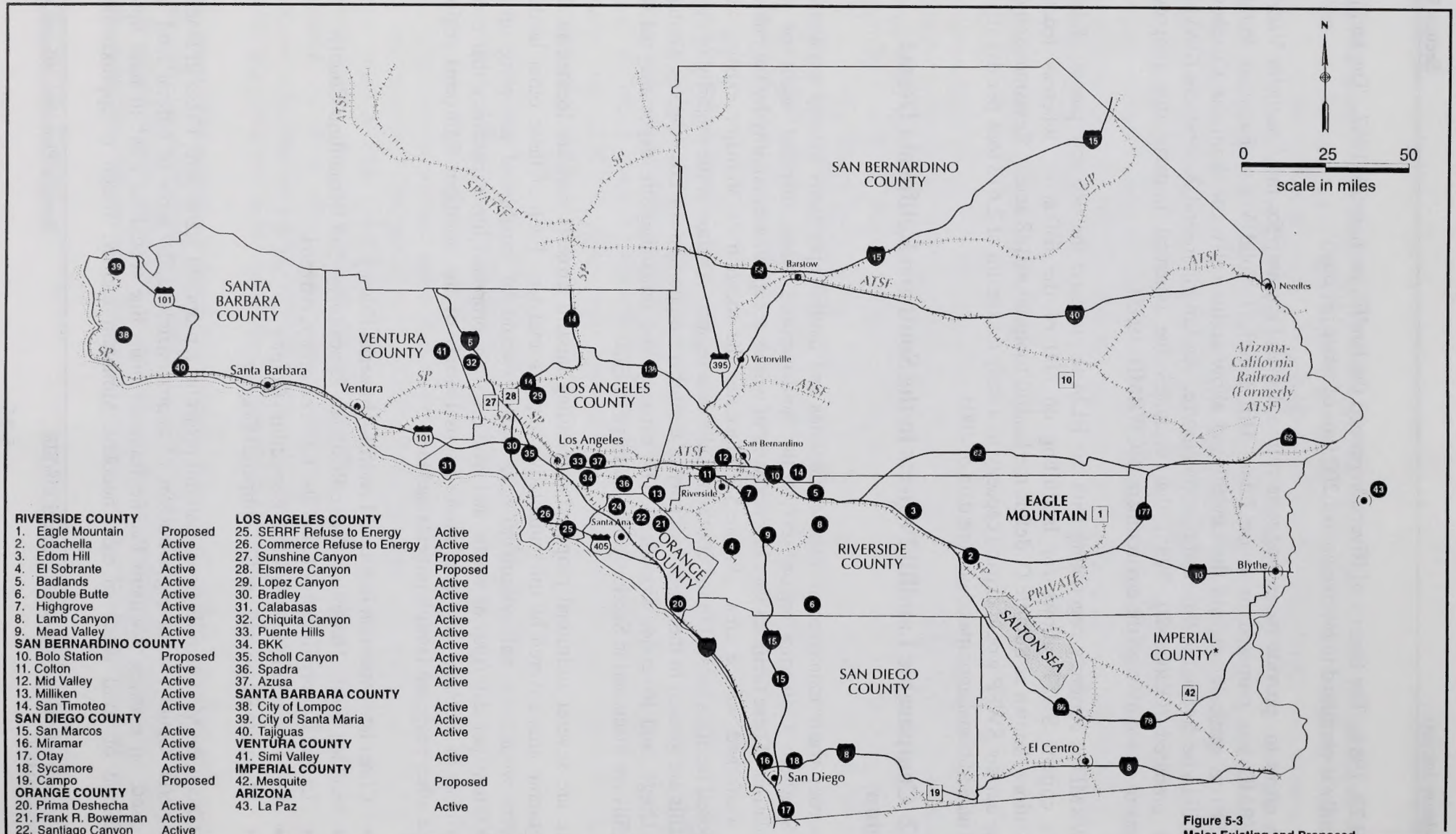
5.4.2 Comparable Landfill Projects in the Southern California Desert Region

Numerous waste management disposal facilities and landfill operations located throughout the Southern California region service the nonhazardous waste disposal needs of the population. These facilities vary in size, types of wastes accepted, accessibility by the public, and wasteshed service area. Figure 5-3 illustrates the location of 36 major existing and proposed landfills located in the Southern California region. As shown, the majority of these landfills are located in the general vicinity of the urbanized portions of Los Angeles, Orange, San Diego, and Riverside Counties. The capacity and remaining life expectancy of the landfills are discussed in Section 1.3.2.2 of this EIS/EIR.

There are several additional proposed or pending landfill projects that are located in the geographic area covered by this cumulative impacts analysis. Each of these other landfill projects would use rail systems to haul wastes, would be capable of accepting up to 20,000 tons per day (tpd) of waste, and would have a proposed life expectancy that could contribute to meeting long-term waste disposal needs of the Southern California region. These other proposed landfill projects include:

- Chocolate Mountain Regional Landfill—Imperial County
- Hidden Valley Hazardous Waste Residuals Repository—San Bernardino County
- La Paz County Regional Landfill—La Paz County, Arizona
- Rail Cycle-Bolo Station—San Bernardino County
- Mesquite Regional Landfill—Imperial County

The Chocolate Mountain Regional Landfill project is a proposed 1,200-acre, Class III landfill in Imperial County, involving a transfer of approximately 2,530 acres of federal land. As proposed, an existing Southern Pacific Railroad main line would be used to haul up to 20,000 tpd of solid waste to the Chocolate Mountain facility, which is approximately



RIVERSIDE COUNTY

1. Eagle Mountain	Proposed
2. Coachella	Active
3. Edom Hill	Active
4. El Sobrante	Active
5. Badlands	Active
6. Double Butte	Active
7. Highgrove	Active
8. Lamb Canyon	Active
9. Mead Valley	Active

SAN BERNARDINO COUNTY

10. Bolo Station	Proposed
11. Colton	Active
12. Mid Valley	Active
13. Milliken	Active
14. San Timoteo	Active

SAN DIEGO COUNTY

15. San Marcos	Active
16. Miramar	Active
17. Otay	Active
18. Sycamore	Active
19. Campo	Proposed

ORANGE COUNTY

20. Prima Deshecha	Active
21. Frank R. Bowerman	Active
22. Santiago Canyon	Active
23. Olinda Alpha	Active
24. Olinda	Active

LOS ANGELES COUNTY

25. SERRF Refuse to Energy	Active
26. Commerce Refuse to Energy	Active
27. Sunshine Canyon	Proposed
28. Elsmere Canyon	Proposed
29. Lopez Canyon	Active
30. Bradley	Active
31. Calabasas	Active
32. Chiquita Canyon	Active
33. Puente Hills	Active
34. BKK	Active
35. Scholl Canyon	Active
36. Spadra	Active
37. Azusa	Active

SANTA BARBARA COUNTY

38. City of Lompoc	Active
39. City of Santa Maria	Active
40. Tajiguas	Active

VENTURA COUNTY

41. Simi Valley	Active

IMPERIAL COUNTY

42. Mesquite	Proposed

ARIZONA

43. La Paz	Active

XX Active XX Proposed

*Note: Imperial County is not in the proposed seven-county wasteshed area but is included for geographic reference

Figure 5-3
Major Existing and Proposed Landfills in Proposed Wasteshed Area
Eagle Mountain Landfill and Recycling Center EIS/EIR

CH2M HILL

m115231.T6.20 countybase 6/96

50 miles south of the proposed Eagle Mountain Project site, over an expected lifetime of approximately 100 years. The Chocolate Mountain Landfill project is not considered to be an active project because no application is pending before Imperial County or the BLM, and no EIR has been completed (Imperial County, 1995). As a result, the Chocolate Mountain Regional Landfill project is not considered to pose a significant potential for cumulative impacts in conjunction with the proposed Project and, therefore, is not considered further in this analysis.

The proposed Hidden Valley project is a 1,300-acre facility to be located in San Bernardino County. The purpose of this proposed facility is to store hazardous waste residuals. Although the Hidden Valley Hazardous Waste Residuals Repository is not designed to accept municipal solid wastes, it retains characteristics and potential impacts sufficiently similar to the proposed Project to be considered for inclusion in this analysis. The Hidden Valley facility would consist of a receiving area, covering approximately 30 acres; several large underground storage areas; unpaved access roads; and a 10-mile road and rail access from the Town of Hector. The Hidden Valley facility, which is approximately 80 miles northwest of the proposed Project site, is intended to receive and transfer approximately 30 to 50 rail cars and 10 to 15 truckloads of material per day, with an expected storage capacity of 120 years.

Action on the application before San Bernardino County is on hold, pending the outcome of a legal challenge to the project. In addition, an EIR has been completed only through the draft stage and has not been circulated. Further, the San Bernardino County Planning Department staff anticipate that the application ultimately will be withdrawn (San Bernardino County, 1995). For these reasons, the Hidden Valley Waste Residuals Repository project is not considered to pose a significant potential for cumulative impacts in conjunction with the proposed Project and, therefore, is not considered further in this analysis.

Each of the projects retained for analysis is described in the following discussion, along with a summary of the anticipated environmental impacts of each project.

5.4.2.1 La Paz County Regional Landfill

The La Paz County Regional Landfill project is a planned 480-acre expansion of an existing 160-acre municipal landfill near Parker, Arizona. To implement the expansion, a 480-acre parcel adjacent to the existing landfill would be purchased from the BLM. The expanded La Paz Landfill primarily would serve the Arizona communities of Parker, Bouse, Wenden, Salome, Cibola, Hope, Vicksburg, Quartzsite, and Ehrenberg (BLM, 1995). Waste would be received via rail shipments on the Arizona & California (A&C) Railroad, which links Phoenix, Arizona, and Barstow, California. The La Paz Landfill is projected to reach capacity in approximately 10 years (i.e., by the year 2008), which is approximately one-tenth the anticipated lifetime of the proposed Eagle Mountain Project. In addition, the A&C rail line runs well north of the proposed Eagle Mountain Project site, the Southern Pacific Transportation Company (SPTC) rail line, and JTNP. Table 5-6 summarizes the regulatory approval status and potential environmental impacts associated with the La Paz project.

Table 5-6
Potential Impacts of the La Paz County Regional Landfill

Project Status

Environmental Documentation: Environmental assessment

Permits/Approvals: Environmental assessment approved by La Paz County

Timeframe: Expansion for 10-year capacity

Potential Environmental Impact	Impact Significance With Mitigation	Potential Cumulative Impact
Water Quality and Use		
Potential surface and groundwater quality degradation resulting from leachate and seepage	Not Significant	
Public Health/Safety		
Potential public health risk from vectors	Not Significant	
Nuisance and aircraft interference from increase in birds and blowing debris	Not Significant	
Potential exposure to toxic air contaminants	Not Significant	
Potential water quality degradation from escape of leachate and seepage	Not Significant	
Potential fire hazard	Not Significant	
Potential risk to workers	Not Significant	
Potential increase in railroad safety hazards resulting from spilled waste materials	Not Significant	
Potential roadway traffic safety hazards resulting from spilled waste materials	Not Significant	
Potential hazard from waste container explosion	Not Significant	
Potential hazard from landfill explosions	Not Significant	
Traffic/Transportation		
Local impact due to project-related traffic in project vicinity	Not Significant	
Potential impact at at-grade rail crossings	Not Significant	
Air Quality		
Potential impact due to emissions from onsite fuel storage tanks	Not Significant	Yes
Potential impact to air quality due to release of fugitive landfill gas	Not Significant	
Potential impact due to fugitive dust emissions by onsite vehicle and equipment use	Not Significant	Yes
Potential odor impact from onsite and train haul gas emissions	Not Significant	
Land Use		
Project maybe inconsistent with BLM CDCA Plan	Not Significant	
Project maybe inconsistent with County General Plan and Zoning Ordinances	Not Significant	
Drainage/Flooding		
Potential increase in offsite flooding	Not Significant	
Biological Resources		
Potential loss of habitat	Not Significant	
Potential increase in invasive non-native plant species	Not Significant	
Potential loss of habitat and individuals due to waste spills along rail line	Not Significant	
Potential loss of habitat and individual sensitive species including: • Desert tortoise • Mule deer • Bighorn sheep	Not Significant	Yes
Potential impact from increase in predator (coyote, raven) species	Significant	Yes
Growth/Socioeconomics		

Table 5-6 Potential Impacts of the La Paz County Regional Landfill		
Potential impact to public due to landfill liability	Not Significant	
Potentially create 150 temporary jobs and 268 long-term jobs	Not Significant	
Geology/Mineral Resources		
None		
Visual/Recreation		
Potential impact due to creation of visible landscape contrast	Significant	
Potential impact due to 24-hour lighting	Not Significant	
Wilderness		
None		
Utilities/Services		
None		
Noise		
Potential impact to offsite receptors	Not Significant	
Potential impact from rail line operations	Not Significant	
Potential impact to employees and visitors	Not Significant	
Cultural Resources		
Potential impact to NRHP eligible sites	Unknown	
Potential disturbance to historic sites	Unknown	
Potential impact to noneligible NRHP sites	Not Significant	
Energy		
None		

Source: Bureau of Land Management, Havasu Resource Area. Environmental Assessment for the La Paz County Regional Landfill. 1995.

The La Paz County Regional Landfill is currently accepting waste from San Diego County. This waste (approximately 400 tpd) is being transported by transfer truck through the County of Riverside and the Coachella Valley via Interstate 10. The operators of the landfill are pursuing other waste stream contracts in Southern California, including the Coachella Valley.

5.4.2.2 Rail Cycle-Bolo Station

The proposed Rail Cycle-Bolo Station Landfill is located in the Mojave Desert in southeastern San Bernardino County between the towns of Cadiz and Amboy. This site is approximately 50 miles north of the proposed Eagle Mountain Project. The Rail Cycle-Bolo Station project with a projected disposal capacity of 487 million tons, would accept waste at a rate of up to 21,000 tpd after 5 years of operation. The operational life of the Rail Cycle-Bolo Station Landfill is estimated to be 60 to 100 years. The proposed Rail Cycle-Bolo Station project includes an exchange of federal lands managed by the BLM, an amendment to the California Desert Construction Area (CDCA) Plan, and rights-of-way across federal lands.

The Rail Cycle-Bolo Station site occupies approximately 4,870 acres of land, of which approximately 2,100 acres would be used for landfill, and 300 acres would be used for support facilities. The remaining 2,470 acres would be used as a buffer zone with surrounding land uses. The BLM manages 1,600 acres, which is proposed to be exchanged for 1,920 acres under private ownership in the CDCA.

Rail access to the Rail Cycle-Bolo Station site would be provided by the existing SPTC or Atchison, Topeka, and Santa Fe Railway lines to a new rail siding at the site. The landfill would operate 8 hours per day, 6 days per week during initial phases. At full capacity, Bolo Station will operate 24 hours per day, and up to 7 trains, 40 transfer trucks, and 20 public vehicles will be accepted at the site on a daily basis. Each train would carry approximately 3,000 tons of municipal solid waste in intermodal-type containers. (BLM and County of San Bernardino, 1992). Table 5-7 summarizes the regulatory approval status and potential environmental impacts associated with the Rail Cycle-Bolo Station project.

5.4.2.3 Mesquite Regional Landfill

The proposed Mesquite Regional Landfill is located to the north of State Route 78 (SR 78) in eastern Imperial County. This site is approximately 75 miles south of the proposed Eagle Mountain Project site in open desert adjacent to the active Mesquite Gold Mine and Ore Processing facility. The Mesquite project involves a land exchange with the BLM, an amendment to the CDCA Plan, and rights-of-way for a railroad spur and a gas pipeline.

The initial rate at which waste would be received at the Mesquite facility is 4,000 tpd, with a maximum rate of 20,000 tpd. The landfill is estimated to have a disposal capacity of 600 million tons, with an estimated operating life of approximately 100 years. (BLM and

Table 5-7
Potential Impacts of the Rail Cycle-Bolo Station Landfill

Project Status
Environmental Documentation:
Project currently under environmental review;
Final EIR/EIS released in August 1994.

Permits/Approvals:
Application on file with San Bernardino County

Timeframe:
Construction = 6-9 months;
Life Expectancy = 60-100 years

Potential Environmental Impact	Impact Significance With Mitigation	Potential Cumulative Impact
Water Quality and Use		
Potential surface and groundwater quality degradation resulting from MSW leachate and seepage	Not Significant	
Potential impact to groundwater supplies with use of 75 ac-ft	Not Significant	
Public Health/Safety	Significant	
Potential public health risk from vectors	Not Significant	
Potential fire hazard	Not Significant	
Traffic/Transportation		
Local impact due to project-related traffic in project vicinity	Not Significant	
Potential safety hazard of truck and trains hauling waste residues	Not Significant	
Air Quality		
Potential impact due to increased NO_x and ROG emissions	Significant	Yes
Potential impact due to fugitive dust emissions (PM_{10}) by onsite vehicle and equipment use	Significant	Yes
Land Use		
Project is inconsistent with BLM CDCA Plan	Significant	
Project is inconsistent with County General Plan and Zoning Ordinances	Significant	
Drainage/Flooding		
Potential impact of flooding during 100-year event	Not Significant	
Potential impact to surface drainages resulting from concentrated runoff	Not Significant	
Biological Resources		
Potential loss of habitat totaling 2,700 acres	Not Significant	
Potential loss of habitat and individuals due to increased noise, light, and traffic	Not Significant	
Potential loss of habitat and individual sensitive species including • Desert tortoise • Kit fox	Not Significant	
Potential impact from increase in predator (coyote, raven) species	Not Significant	
Growth/Socioeconomics		
Create 262 temporary jobs and 267 long-term jobs	Not Significant	
Potential impact from local population increase of up to 668 people	Not Significant	
Geology/Mineral Resources		
Potential impact to landfill control systems due to excessive seismic shaking	Not Significant	
Visual/Recreation		
Potential impact due to creation of visible landscape	Significant	

Table 5-7 Potential Impacts of the Rail Cycle-Bolo Station Landfill		
contrast	Not Significant	
Potential impact due to 24-hour lighting		
Wilderness		
None		
Utilities/Services	Not Significant	
Potential impact on local school demand		
Potential impact on police and fire protection services	Not Significant	
Potential impact on existing local solid waste disposal systems	Not Significant	
Potential impact on telephone, gas, and electric power utilities	Not Significant	
Noise	Not Significant	
Potential impact to offsite receptors	Not Significant	
Potential impact to employees		
Cultural Resources	Not Significant	
Potential impact to 22 NRHP eligible sites		
Potential impact resulting from increased vandalism from workers and public	Not Significant	
Energy	Not Significant	
Potential impact on gas and electric power utilities		
Source: County of San Bernardino and U.S. Department of Interior, Bureau of Land Management. Final Environmental Impact Report/Environmental Impact Statement—Rail Cycle/Bolo Station Landfill. 1994.		

County of Imperial, 1994). The project would occupy approximately 4,250 acres of land, of which approximately 2,290 acres are currently disturbed lands on which the landfill would be located.

Rail access to the site would be by the Southern Pacific main line to a new 4.5-mile railroad spur at the site. Operation would initially be 100 percent rail, with possible subsequent truck transport of waste from Imperial County. As part of this project proposal, approximately 1,750 acres of federal land managed by the BLM would be exchanged for 2,242 acres of higher quality wildlife habitat on the Chuckwalla Bench and high quality scenic resources in the Santa Rosa Mountains National Scenic Area (both currently are privately owned). Table 5-8 summarizes the present regulatory approval status and potential environmental impacts associated with the Mesquite project.

5.5 Cumulative Environmental Impacts and Mitigation

Certain impacts associated with the proposed Eagle Mountain Project could arise, which, in conjunction with impacts attributable to other projects (either in the immediate vicinity or with similar characteristics), could have the potential to result in collectively adverse effects to the environment that are of greater significance than those generated individually by the proposed Project. Cumulative impacts could include those effects considered to be less than significant individually, but which could become significant when evaluated in relation to impacts from other projects.

5.5.1 Criteria for Determining Cumulative Impact Significance

The CEQA Guidelines (Section 15382) define the term "significant effect on the environment" as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic and aesthetic significance." CEQA also states that there is no predetermined definition of "significant effect" because the significance of an activity can vary with the setting. For example, an activity that might not have a significant effect in an urban area could be considered significant in a rural area (CEQA Guidelines, Section 15064[b]). The CEQA Guidelines (Section 15355) define cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." This section of the Guidelines notes further that:

a) The individual effects may be changes resulting from a single project or a number of separate projects.

b) The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

Table 5-8
Potential Impacts of the Mesquite Regional Landfill

Project Status

Environmental Documentation:
Project currently under environmental review
Draft EIR/EIS released April 1994
Final EIR/EIS released certified September 1995

Permits/Approvals:
Project approved by Board of Supervisors on September 6, 1995
Waste discharge requirements issued November 1995

Timeframe:
Initial Project construction = 10 months
Project Life Expectancy = 100 years

Potential Environmental Impact	Impact Significance With Mitigation	Potential Cumulative Impact
Water Quality and Use		
Potential surface and groundwater quality degradation resulting from MSW leachate and seepage	Not Significant	
Public Health/Safety		
Potential public health risk from vectors	Not Significant	
Nuisance and aircraft interference from increase in birds and blowing debris	Not Significant	
Exposure to toxic air contaminants	Not Significant	
Potential water quality degradation from escape of leachate and seepage	Not Significant	
Potential fire hazard	Not Significant	
Potential risk to workers	Not Significant	
Potential increase in offsite flooding of roadways	Not Significant	
Potential increase in railroad safety hazards resulting from spilled waste materials	Not Significant	
Potential roadway traffic safety hazards resulting from spilled waste materials	Not Significant	Yes
Potential hazard from waste container explosion	Not Significant	
Potential hazard from landfill explosions	Not Significant	
Traffic/Transportation		
Local impact due to project-related traffic in project vicinity	Not Significant	Yes
Potential impact to winter weekend traffic on SR 78	Significant	
Potential impact at at-grade rail crossing	Not Significant	Yes
Potential safety hazard with truck transport of liquefied gas	Not Significant	
Potential safety hazard of truck and trains hauling waste residues	Not Significant	Yes
Air Quality		
Potential impact due to increase criteria pollutant emission with flare station	Not Significant	Yes
Potential impact due to emissions from onsite fuel storage tanks	Not Significant	
Potential impact to air quality due to release of fugitive landfill gas	Not Significant	
Potential impact due to fugitive dust emissions by onsite vehicle and equipment use	Not Significant	Yes
Potential odor impact from onsite and train haul gas emissions	Not Significant	
Land Use		
Project is inconsistent with BLM CDCA Plan	Not Significant	
Project is inconsistent with County General Plan and Zoning Ordinances	Not Significant	
Drainage/Flooding		
Potential increase in offsite flooding of roadways	Not Significant	
Biological Resources		

Table 5-8
Potential Impacts of the Mesquite Regional Landfill

Potential loss of habitat	Not Significant	
Potential increase in invasive non-native plant species	Not Significant	
Potential loss of habitat and individuals due to waste spills along rail line	Not Significant	
Potential loss of habitat and individual sensitive species including • Desert tortoise • Mule deer • Bighorn sheep	Not Significant	
Potential impact from increase in predator (coyote, raven) species	Not Significant	
Growth/Socioeconomics		
Potential impact to public due to landfill liability	Not Significant	
Create 150 temporary jobs and 268 long-term jobs	Not Significant	
Geology/Mineral Resources		
None		
Visual/Recreation	Significant	
Potential impact due to creation of visible landscape contrast		
Potential impact due to 24-hour lighting	Not Significant	
Wilderness		
None		
Utilities/Services		
None		
Noise	Not Significant	
Potential impact to offsite receptors	Not Significant	
Potential impact from rail line operations	Not Significant	
Potential impact to employees and visitors		
Cultural Resources	Not Significant	
Potential impact to 10 NRHP eligible sites	Not Significant	
Potential disturbance to historic army camp sites	Not Significant	
Potential impact to noneligible NRHP sites	Not Significant	
Potential impact to Singer Geoglyphs ACEC		
Energy		
None		

Source: Bureau of Land Management, California Desert District and County of Imperial Planning and Building Department. Environmental Impact Statement and Environmental Impact Report for the Proposed Mesquite Regional Landfill. 1994.

> Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

Unlike the CEQA guidelines, NEPA regulations do not provide a specific list of elements that the cumulative impacts analysis must contain. Instead, the courts have adopted more general standards for determining the sufficiency of a cumulative impacts analysis; i.e., an EIS must provide a "reasonably thorough discussion" of cumulative impacts to satisfy NEPA. (*Resources Ltd. v. Robertson*, 35 F. 3d 1300, 1306, 9th Cir. 1994)

Consequently, for the present analysis and in the context of the above discussion, a potential Project-related effect is determined to be cumulatively significant if, when considered collectively with the impacts of other projects identified previously in this subsection, it exceeds the thresholds of significance for a particular individual environmental resource area, as defined and described in Chapter 4 of this EIS/EIR.

5.5.2 Potential Cumulative Impacts

This section describes cumulative impacts to environmental resources that could potentially arise with implementation of the proposed Eagle Mountain Project in association with the other projects presented in this analysis. This discussion is presented by environmental resource area. Potential cumulative impacts to each environmental resource area are discussed as they pertain to: (1) implementation of the proposed Eagle Mountain Project and other projects located within its immediate vicinity; and (2) other desert landfill projects with similar characteristics and environmental impacts.

For those projects proposed in the immediate vicinity of the Eagle Mountain Project, environmental resource area cumulative impacts are discussed in the context of three time periods that correspond approximately to the anticipated development and operational schedule of the proposed Project. These time periods are:

- Year 1 through Year 5
- Year 6 through Year 50
- Year 51 through Closure

During the Year-1-through-Year-5 time period, it is expected that the proposed Project would initiate construction and operation. Renovation of the Eagle Mountain Townsite would occur in anticipation of providing housing for landfill employees and their families. Other active projects within the vicinity of the Eagle Mountain Project during this period would be limited to actions by the NPS in JTNP. It is expected that specific projects described in Section 5.5.1.2 would begin to be implemented. Based on the projections of the NPS (NPS, 1995a), visitor use would double in this period, representing approximately 2 million persons annually. No action on the other projects located in the vicinity of the proposed Project is expected to occur during this time period. Only additional testing and studies of the ECEC hydroelectric project are anticipated to take place during this period.

During the Year-6-through-Year-50 time period, the proposed Eagle Mountain Landfill would continue operations. The Townsite would have been renovated to its proposed maximum, and both the landfill operations and Townsite population would stabilize at their proposed maximum capacities. It is expected that the ECEC hydroelectric project would have completed construction of its proposed facilities and be operational. The ECEC project would have undergone initial testing and adjustments during the early years of this period, but would be expected to have stabilized operations at its planned capacity through its remaining license period. Projects proposed by the NPS within JTNP also would have been implemented during the early portions of this time period. Additional NPS projects could be implemented in response to future conditions and needs (these JTNP projects are presented in The Final General Management Plan EIS [NPS, 1995b]). These projects, however, cannot be foreseen at this time. Visitor use within JTNP would have reached its currently planned maximum of about 4 million visitors annually. It can be assumed that visitor use could continue to increase beyond the currently estimated maximum; however, this would be dependent on future economic conditions, social values, and population characteristics that cannot be readily predicted at this time.

During the Year-50-through-Closure time horizon, the proposed Eagle Mountain Project would continue maximum operations, decreasing accepted waste materials as it nears completion. The build-out capacity of the proposed Eagle Mountain Project is approximately 100 years. The ECEC hydroelectric project would initiate its second licensing period and would be subject to FERC operational modifications, as determined during project relicensing. It is expected that these modifications would include specific environmental enhancements and other measures determined by FERC to be in the public interest. If FERC elects not to issue a second license to the ECEC hydroelectric project, the facility would be required to cease operations and initiate closure/abandonment actions. The specific activities associated with closure of the ECEC hydroelectric project are not known at this time. However, it would likely include breaching of the reservoir impoundments, removal and salvage of mechanical and electrical equipment, and demolition of those structures that could pose a future public hazard.

The NPS would continue to implement programs and projects needed for achieving JTNP goals and objectives. Neither the specific projects nor the schedule for implementation can be foreseen at this time (i.e., implementation of planned projects for JTNP is contingent on congressional funding and research exchanges with academic and other research institutions). Visitor use in JTNP would correspond to the public's desire for outdoor recreational opportunities. The ultimate, allowable maximum use of JTNP is not known, but could exceed, by a substantial amount, the planned maximum use of 4 million visitors annually. Estimates of visitor use beyond the currently planned maximum are speculative and subject to future NPS policies and requirements for protection of JTNP values and resources.

Other desert landfill projects with characteristics similar to those of the proposed Project, or with similar environmental impacts with the potential to result in cumulative impacts with the proposed Project, include the Rail Cycle-Bolo Station Landfill, the La Paz County Regional Landfill, and the Mesquite Regional Landfill.

The Rail Cycle/Bolo Station project was presented to the San Bernardino Board of Supervisors for approval on September 27, 1995. As discussed in Section 2.8.3.2, two measures were on the San Bernardino County General Election ballot in March 1996 that affected the proposed Rail Cycle/Bolo Station project. In the first initiative, voters rejected the measure that would have precluded the development of the site on the basis of its proximity to groundwater resources. The voters, however, also rejected the imposition of the landfill fee arrangement special tax, thereby invalidating this proposed financing arrangement. The project is now back again before the County of San Bernardino for further consideration. At this writing, it is not known if a new special tax measure will be submitted to voters or if the site will continue to be proposed for a regional landfill. There is also a legal challenge pending against the Rail Cycle/Bolo project in Superior Court.

The Mesquite Regional Landfill received final approval from the Imperial County Board of Supervisors on September 6, 1995 (Imperial County, 1995). The adequacy of the EIS/EIR, however, has been challenged in the California Superior Court.

An Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) were issued on October 5, 1995, for the La Paz County Regional Landfill.

This analysis does not characterize the potential cumulative impacts of these projects by specific time periods. A discussion of each environmental resource issue is presented to provide a detailed perspective on potential cumulative effects expected to occur with implementation of the Eagle Mountain Project and other desert landfill projects with similar characteristics and environmental impacts.

5.5.2.1 Groundwater Quality and Use

Proposed Project and Other Projects Located Within its Vicinity. This evaluation focuses on groundwater because surface-water resources will not be adversely impacted by either the proposed Project (see Section 4.6) or other potential projects. In addition, because groundwater quality will not be significantly altered by the proposed Project (see Section 4.1), only potential impacts associated with groundwater use are included in this evaluation of cumulative impacts.

The ECEC hydroelectric project and agricultural water uses could contribute to cumulative impacts to the availability of groundwater, when combined with the demand for groundwater by the proposed Project. Projects proposed by the NPS for JTNP will not affect groundwater resources adversely; therefore, they will not contribute to a significant cumulative impact. Water use by either the ECEC project or agriculture could, independently, have a direct impact on the availability of groundwater (i.e., significantly contribute to groundwater depletion). The significance criterion for groundwater depletion (see Section 4.1) includes pumping from the Chuckwalla Basin in excess of total replenishment (i.e., pumping in excess of approximately 12,200 ac-ft/yr). Pumping at this scale would lead to overdraft in the Chuckwalla Basin and a significant environmental impact. Historically, agricultural water

demand in the Desert Center area has exceeded 20,000 ac-ft/yr, which led to a condition of overdraft in the basin in the mid-1980s (Section 3.1; Mann, 1986). If agricultural water demands, which are currently less than approximately 6,000 ac-ft/yr, increase to the levels of the 1980s, a cumulatively significant environmental impact would result with the proposed Project.

According to information in ECEC's license application, the proposed hydroelectric project is anticipated to require about 15,000 ac-ft of groundwater to fill its storage reservoir over a 2-year period. A report prepared by GeoSyntec (GeoSyntec, 1995) concluded that as much as 33,400 ac-ft of groundwater could be needed if measures to control seepage were not successful. Using either figure, the cumulative effect of the pumping required for the hydroelectric project and the Eagle Mountain Landfill project would be a cumulatively significant impact on the Chuckwalla Valley groundwater resources. At a minimum, the cumulative pumpage for 1 year from both projects (7,500 + 1,243 = 8,743 ac-ft) added to the present pumpage of 7,500 ac-ft/yr would exceed the annual recharge (12,200 ac-ft) by over 4,000 ac-ft/yr.

After initial filling, the annual rate of pumpage to offset water losses for the hydropower project would range from 2,300 ac-ft/yr to 7,000 ac-ft/yr. The upper limit assumes seepage control measures would not be successful. If successful as stated by ECEC, the cumulative impacts from both projects would be about 3,543 ac-ft/yr, which, when added to the current usage, would approach the annual recharge of the Chuckwalla Aquifer.

The proposed ECEC project is anticipated to store water in the upper reservoirs (to the rest of the proposed landfill) and in the lower reservoir (Phase V of the proposed landfill). If the ECEC project is built and operated, it would preclude MRC and Kaiser from constructing and disposing of waste in Phase V of the landfill project.

The storage of water in large quantities near and at an elevation above the waste and liner system of the landfill presents three potential impacts. First, seepage of water from the upper reservoir could impose a hydraulic pressure on the liner, causing potential stability problems with the landfill. Second, seepage of water from either reservoir could affect the landfill groundwater monitoring systems by causing changes in the baseline water levels and direction of groundwater flow, and/or introducing chemical constituents to the groundwater that are different than the existing groundwater quality. Third, a breach of the small dam on the upper reservoir (due to a seismic event or other cause) could result in water in the upper reservoir flowing across or around the landfill, causing erosional damage and subsequent impacts to the water.

ECEC has stated in its license application that the ponds will be lined to prevent seepage, and the upper reservoir dam will be designed to withstand earthquake loading. How this would be done has not been finally established by FERC or ECEC. The SWRCB (in March 8, 1994, and April 1995 letters) noted that the ECEC project had the potential to impair groundwater and, therefore, requested that additional information be provided regarding operation of the proposed ECEC project. In the 1995 letter, the SWRCB also requested that

ECEC develop information to document that the operation of the proposed hydroelectric facility will not conflict with permit requirements approved by the RWQCB in 1994 for the proposed landfill. As discussed above, if seepage control measures are not successful, the annual seepage could reach 7,000 ac-ft/yr, which could impact the groundwater beneath the landfill and, thus, affect the groundwater monitoring system.

Based on the estimated water consumption of the combined projects, the impact to groundwater overdraft would be cumulatively significant. In addition, if water consumption from agriculture returns to the levels that occurred in the 1980s, the project effects would also exceed annual recharge and be cumulatively significant.

Proposed Project and Other Projects with Similar Characteristics and Environmental Impacts. The proposed Project would be considered to result in a potential cumulatively significant impact if, when considered collectively with the other desert landfill projects identified previously in this section, it exceeds the thresholds of significance for the water quality resource area as defined and described in Section 4.1 of this EIS/EIR.

The La Paz County Regional Landfill is located within the Parker Basin of the Lower Colorado River Planning Area. The Parker Basin covers approximately 2,145 square miles of western Arizona along the Colorado River. Groundwater recharge to the Parker Basin comes from the Colorado River, precipitation, seepage from canals and irrigated land, and underflow from bordering areas. Depth to groundwater at the La Paz landfill site is approximately 510 feet, with groundwater flow typically to the northwest. There is no known hydrologic connection between the Chuckwalla Valley Groundwater Basin of the proposed Eagle Mountain Project site and the Parker Groundwater Basin.

The Mesquite Regional Landfill project resides within the combined Amos-Ogilby Hydrologic Unit, a 300-square-mile area that lies approximately 70 miles to the southeast of the Eagle Mountain Project site. There is no known hydrologic connection between the Chuckwalla Valley Groundwater Basin of the proposed Eagle Mountain Project site and the Amos-Ogilby Hydrologic Unit.

The Rail Cycle-Bolo Station project resides within the Bristol and Cadiz groundwater basins, a combined 1,140-square-mile area that lies approximately 30 miles to the north of the Eagle Mountain Project site. Both the Bristol and Cadiz basins are hydrologically closed, internally drained basins, with evaporation as the primary means of groundwater discharge, rather than subsurface flow into another basin. There is no known hydrologic connection between the Chuckwalla Valley Groundwater Basin of the proposed Project site and the Bristol and Cadiz groundwater basins.

The proposed Project, as well as each of the other desert landfill projects, contains design, construction, and operational measures (e.g. liners and leachate management systems) that will mitigate or minimize potential water quality impacts and protect water resources. Water quality impact mitigation measures associated with the proposed Project are discussed in Section 4.1 of this EIS/EIR. These mitigation measures, in conjunction with those of the

other desert landfill projects, as well as the distance separating these other projects from the Eagle Mountain Project site, would reduce the potential for cumulative water quality impacts to below the level of significance.

5.5.2.2 Public Health and Safety

Proposed Project and Other Projects Located Within Its Vicinity

As noted in Section 4.2, Public Health and Safety, the mitigation measures incorporated into the design of the proposed Eagle Mountain Project would reduce the potential for public health and safety impacts to below the level of significance. The proposed Project is designed and will be constructed and operated in compliance with all applicable regulations governing public and worker health and safety. Likewise, there is no evidence that either the ECEC project or projects proposed by the NPS within JTNP are expected to create a potential public health hazard or involve the use, production, or disposal of materials that could pose a hazard to human, animal, or plant populations within the vicinity of the proposed Project. Therefore, the potential for cumulative public health and safety impacts is considered to be below the level of significance as discussed above and described in Section 4.2 of this EIS/EIR.

Proposed Project and Other Projects with Similar Characteristics and Environmental Impacts

The proposed Project would be considered to result in a potential cumulatively significant impact if, when considered collectively with the other desert landfill projects identified previously in this subsection, it exceeds the thresholds of significance for public health and safety as defined and described in Section 4.2 of this EIS/EIR. The Eagle Mountain Project, collectively with the La Paz County Regional Landfill, Rail Cycle-Bolo Station Landfill, and the Mesquite Regional Landfill projects, would not be expected to result in potential impacts to public health and safety that are considered cumulative in character because of regulatory, design, and operational safeguards proposed as part of these projects, as well as their discrete, noncontiguous, and spatially distant nature.

5.5.2.3 Traffic and Transportation

Proposed Project and Other Projects Located Within Its Vicinity

As described in Section 4.3, the Eagle Mountain Project would generate about 100 truck round-trips per day. This would result in a total of 200 daily truck round-trips to the landfill site. In addition, approximately 500 vehicle trips per day would be generated by nonhaul vehicles entering and leaving the Project site. This level of Project-related vehicular traffic is approximately 13.7 percent of the estimated average 3,652 vehicle trips per day that would be generated by visitors to JTNP, assuming three visitors per vehicle, if total annual visitor use increases to 4 million visitors per year as expected.

Vehicle access to the JTNP is limited to three entrance points (i.e., Cottonwood entrance from Interstate 10 in southern JTNP, Joshua Tree entrance from Highway 62 in western JTNP, and Twentynine Palms entrance from Highway 62 in northern JTNP). Because park access is limited to these locations and there is no vehicular access to JTNP visitor resources in the vicinity of the proposed Project site, no significant cumulative impact to local roadways in the immediate vicinity of the proposed landfill is expected. Cumulative traffic use could occur along portions of Interstate 10 that service haul trucks and JTNP visitors, simultaneously. On the basis of the estimated capacity of Interstate 10 along the highway segment between Indio and Palm Springs, no cumulative reduction in acceptable Level of Service (LOS) (see Section 4.3) would be anticipated. Therefore, no significant cumulative impact on local or regional traffic and transportation systems appears likely during this period.

Because the proposed ECEC project would not be constructed or operational during the Year-1-through-Year-5 time period, it would not contribute to cumulative effects on vehicle trips on public roadways.

Proposed Project and Other Projects with Similar Characteristics and Environmental Impacts

The proposed Project would be considered to result in a potential cumulatively significant impact if, when considered collectively with the other desert landfill projects identified previously in this subsection, it exceeds the thresholds of significance for traffic/transportation as defined and described in Section 4.3 of this EIS/EIR.

Of the projects under consideration, only the Mesquite Regional Landfill appears to have the potential for cumulative impact. The Rail Cycle-Bolo Station is sufficiently remote from rail and highway resources to be used by the Eagle Mountain Project to eliminate it from further consideration. The Mesquite project would use the same SPTC rail right-of-way as the Eagle Mountain Project from the Los Angeles urban area up to Ferrum Junction. At that locale, Mesquite waste shipments would continue southeast to near Glamis, where an approximate 4-mile-long spur would link the Southern Pacific main line to the Mesquite landfill site.

The average volume of rail traffic reported along the SPTC main line route for 1994 was 27 trips per day, up approximately 38 percent from 1993 (Kingsley Group, 1995). Projected use by the Mesquite project would be five unit train round trips per day, and the Eagle Mountain Project would use an average of five unit trains per day, for a combined total of 10 additional unit trains per day. Combined with the current average use, this level of additional rail traffic would be well below the haul route's current maximum practical capacity of 65 trips. Therefore, cumulative impacts on the SPTC rail traffic would remain below the level of significance for traffic and transportation as defined and described in Section 4.3 of this EIS/EIR.

Other conditions could also affect future truck traffic along I-10 and other major highways. Prior to implementation of the North American Free Trade Agreement (NAFTA), Caltrans

had originally projected about a 35 percent increase in traffic, though no significant increase has yet been noted (Personal Communication with Caltrans, January 8, 1996). The projected increases will be monitored to determine what effects, if any, occur from NAFTA activities.

5.5.2.4 Air Quality

Implementation of the Eagle Mountain Project would be considered to result in a potential cumulatively significant impact if, when considered collectively with other projects located within its vicinity or other desert landfill projects identified previously in this section, it exceeds the thresholds of significance for the air quality resource area as defined and described in Section 4.4 of this EIS/EIR. Appendix E, provides the findings of the detailed air quality analysis for the proposed Project, as well as for potential cumulative impacts associated with this and other projects.

As noted in Section 4.4 and Appendix E, the proposed Project would be expected to have a significant effect on air quality when compared to a baseline of zero emissions/concentrations for criteria pollutants. Consequently, any additive air quality effect with other projects within the same airshed would result in a significant cumulative effect. The proposed Project, however, could result in air quality benefits in the South Coast Air Basin (SCAB) for ozone, carbon monoxide, and particulate matter, at the expense of increased impacts in desert areas. Although the improvements in the SCAB would affect the desert areas over the San Gorgonio Pass, these benefits would not be sufficient to override the direct adverse impacts in the desert (Section 4.4 and Appendix E).

Proposed Project and Other Projects Located Within Its Vicinity

ECEC Hydroelectric Project

Onsite emissions associated with the ECEC hydroelectric project would be associated with initial construction activities (e.g., well drilling, pipeline trenching, embankment construction, and tunneling during the beginning of the Year-5-to-Year-50 time period). Volatile organic compounds (VOCs) and reactive organic gases (ROGs) associated with equipment exhaust and particulates (PM_{10}) would be the primary air pollutants associated with this phase of activities. The primary operational source of emissions would be associated with generating the power necessary to pump water from the lower to the upper reservoir. This power is assumed to be generated by existing power plants in Southern California.

Cumulative Impacts. The cumulative impacts of the proposed Project can be classified into (1) impacts in the immediate vicinity of the proposed Project and (2) impacts that could result in cumulative impacts to the environment throughout the entire Southern California region.

Local Projects. To assess the impacts in the immediate vicinity of the proposed Project, the proposed ECEC hydroelectric project and the JTNP development plans were analyzed in consideration of the impacts from the proposed Eagle Mountain Project and the development

alternatives to the proposed Project. To summarize the cumulative impacts in the immediate vicinity of the proposed Project, however, only the combined impacts of the proposed Project with mitigation, the ECEC hydroelectric project, and the JTNP are shown in Table 5-9.

Table 5-9
Eagle Mountain Landfill and Recycling Center
Cumulative Impacts for Proposed Project With Mitigation

	Daily Emissions (lb/day)					Annual Emissions (tons/yr)				
Project	NO_x	CO	PM_{10}	VOC	SO_2	NO_x	CO	PM_{10}	VOC	SO_2
Initial Construction										
Eagle Mountain	3,473	894	1,649	268	80	N/A	N/A	N/A	N/A	N/A
ECEC	210	842	1,804	316	526	N/A	N/A	N/A	N/A	N/A
Combined	3,683	1,736	3,453	584	606	N/A	N/A	N/A	N/A	N/A
Normal Operation—Onsite Emissions										
Eagle Mountain	3,834	2,771	1,609	948	575	699	501	294	173	105
ECEC	3	13	3	5	8	2	1	0	0	0
JTNP[1]	121	1,317	20,245	69	17	14	152	2,336	8	2
Combined	3,958	4,101	21,857	1,022	600	715	654	2,630	181	107
Normal Operation—Total Regional Emissions[2]										
Eagle Mountain	4,317	1,621	333	436	183	1,487	797	355	252	139
ECEC	60,124	10,055	1	12,722	0	7,054	1,180	0	1,493	0
JTNP[1]	338	3,492	25,064	173	61	39	403	2,892	20	7
Combined	64,779	15,168	25,398	13,331	244	7,881	1,879	2,953	1,592	41

[1]Daily emissions for JTNP development represent the average daily emissions in the maximum month of visitation.
[2]For proposed Project, total regional emissions include train and transfer truck travel outside of the project boundaries as well as onsite emissions. For ECEC, total regional emissions include power plants. For JTNP, total regional emissions include vehicle travel outside of the park.
ECEC = Eagle Crest Energy Company
JTNP = Joshua Tree National Park

As determined by the results of emission modeling discussed in Section 4.4 and detailed in Appendix E, emissions from the ECEC hydroelectric project are expected to have a cumulatively significant impact in concert with the emissions from the proposed Eagle Mountain Project.

Joshua Tree National Park

As noted in Section 4.4 and Appendix E, the major source of increased impacts for JTNP would be attributable to additional park visitors and their vehicles over the next 10 to 15 years. The largest impact calculated for the increased visitor rates estimated by the NPS is an increase of 2,336 tons/year of particulate (PM_{10}) emissions associated with in-park vehicle travel (Appendix E). Consequently, although these emissions will be located near the main JTNP entrances, which are approximately 60 miles from the proposed Project, the emissions from proposed developments at JTNP are considered to be cumulatively significant, on a regional basis, in concert with the emissions from the proposed Eagle Mountain Project.

Proposed Project and Other Projects with Similar Characteristics and Environmental Impacts

To evaluate the regional cumulative impacts from the proposed Project, projects of similar character that could affect similar environmental resources, and those located in geographic proximity to the proposed Project were evaluated. The projects evaluated are the Mesquite Regional Landfill in Imperial County, the Rail Cycle-Bolo Station in San Bernardino County, and the La Paz County Regional Landfill in La Paz County, Arizona. Although the individual project emission estimates are somewhat different, the future actual emissions per ton of solid waste are similar for the various projects. This is shown in Table 5-10. Because the projects are located at sufficient distances to avoid any local interaction, and the amount of waste disposal is a function of the waste generated and not the landfill capacity, the cumulative emissions are significant only if the emission impacts of any individual project are significant.

Table 5-10
Comparison of Total Project Emissions (on- and offsite)
per Ton of Solid Waste
(Emissions in lb/ton of MSW)

Project	NO_x	ROG	PM_{10}	SO_x	CO
Eagle Mountain	0.4	0.1	0.1	0.1	0.2
Mesquite	0.5	0.1	0.03	0.03	0.2
Bolo Station	0.6	0.2	0.2	0.1	0.2

Note:
Emissions based on landfill capacity of 20,000 tpd for Eagle Mountain and Mesquite and 21,000 tpd for Bolo Station. Bolo Station emissions based on boiler use in Years 25 and beyond.

The one opportunity for the emissions from these various projects to interact is with respect to offsite rail emissions. The rail emission estimates for these projects are compared with those of the Eagle Mountain Project in Table 5-11.

Both the Eagle Mountain and Mesquite landfills will be served by trains leaving the SCAB over the SPTC rail system through Colton and Beaumont Summit. At Ferrum Junction, where the municipal solid waste destined for delivery to the Eagle Mountain Landfill will be transferred onto the Eagle Mountain Railroad, the municipal solid waste to be delivered to the Mesquite Landfill will continue on the SPTC rail system. The Rail Cycle-Bolo Station project will be served by Santa Fe trains leaving the SCAB over the Cajon Pass. All three projects, therefore, will result in emissions in both the SCAB and the SEDAB. Emissions in the SCAB will occur over closely located East-West rail corridors; emissions in the SEDAB will be somewhat separated.

Table 5-11
Comparison of Rail Emissions for Various Projects
(All Projects are with Mitigation[1])

Facility	NO_x	ROG	PM_{10}	SO_x	CO
Maximum Daily Emissions in lb/day					
Eagle Mountain	3,377	342	206	157	1,171
Bolo Station	7, 882	307	170	563	1,046
Mesquite	7,560	210	140	100	650
La Paz	848	30	16	62	102
Maximum Annual Emissions in tons/year					
Eagle Mountain	616	62	38	29	214
Bolo Station	1,230	48	27	88	163
Mesquite[2]	1,380	38	26	18	119
La Paz	155	6	3	11	19

Notes:
[1]Mesquite and Eagle Mountain capacity is 20,000 tons/day of municipal solid waste. Bolo Station capacity is 21,000 tons/day. La Paz emissions are for 2,000 tons/day of municipal solid waste from the Los Angeles area.
[2]Annual emissions computed assuming 365-day-per-year operation.

The Rail Cycle-Bolo Station rail emissions will be in the northern portion of the SEDAB; the Eagle Mountain Project rail emissions will be in the central portion of the SEDAB; and the Mesquite Landfill rail emissions will be in the central and southern portions of the SEDAB. These emissions, however, will not be entirely additive. As stated above, the amount of waste transported (and the emissions associated with this transport) is not determined by the available landfill capacity; rather, it is determined by the total amount of waste generated, as well as the efficacy of the provisions of the waste diversion requirements of AB 939. Decisions regarding waste disposal areas ultimately will affect the distribution of waste among the proposed landfill projects, not the total amount of waste handled and/or transported. It is therefore reasonable to assume that regional emissions would be approximately constant, regardless of how many projects are built, even though temporary, localized emission increases conceivably could arise due to shared use of portions of the Southern Pacific corridor. Such localized emission increases would be minimized through effective waste shipment management techniques and rail line scheduling.

5.5.2.5 Land Use

Potential Land Use impacts of the proposed Eagle Mountain Project are detailed in Section 4.5. The proposed Project includes two County General Plan Amendments, two Zone Changes, Development Agreement, Revised Reclamation Plan, two Specific Plans, and the BLM/Kaiser land exchange and rights-of-way. Upon Project certification, implementation of mitigation measures in this EIS/EIR, and consistency with agency plans and policies, impacts resulting from the proposed Project would be reduced to a level of insignificance.

The other projects, for the most part, are separated by substantial distances, and would not act in a cumulative manner to affect local or regional land uses. Although the desert landfill

projects may be considered to be significant in terms of inconsistency with existing BLM CDCA or County General Plans, each of these other landfill projects has proposed code, plan, or policy amendments that would bring the projects into local and regional land use compliance/compatibility. General Plan consistency would be achieved after amendments to the General Plan are approved. These projects would not be expected to act in a cumulative manner to generate greater or more widespread adverse impacts to land uses of the area due to their discrete, noncontiguous, and spatially distant nature.

According to the FERC, any BLM-administered lands that fall within the boundaries of ECEC's proposed hydropower project are reserved for power purposes under Section 24 of the FPA, even if they have been set aside by the BLM for the proposed BLM/Kaiser land exchange. According to Kaiser, based on the information contained in ECEC's April 1994 license application, it appears that a small portion of the BLM-administered lands proposed to be conveyed by the BLM to Kaiser as part of the land exchange fall within the boundaries of ECEC's proposed hydropower facility.

5.5.2.6 Surface Water Drainage and Flooding

For surface water drainage and flooding, potential impacts were determined to be site-specific in character, and are considered impacts only because of local limitations to either natural or man-made surface drainageways. Although such impacts could occur simultaneously at more than one project location, they would not be expected to contribute in a cumulative manner to greater or more widespread impacts because of their discrete, noncontiguous, and spatially distant nature.

5.5.2.7 Biological Resources

Proposed Project and Other Projects Located Within Its Vicinity

The proposed Project will not generate any cumulative impacts on biological resources in the area during the Year-1-through-Year-5 time frame, because no other projects discussed in this cumulative analysis will be contributing to cumulative impacts during this time period. The impacts on, and mitigation measures for, biological resources described in Section 4.7 of this EIS/EIR would remain applicable to the proposed Project.

The potential loss of Le Conte Thrasher nesting habitat associated with implementation of the proposed Project is not considered to constitute a significant impact because, from a regional perspective, this loss is not expected to result in a threat to the long-term persistence or viability of the population. In addition, the planned purchase of additional habitat acreage using the Environmental Trust Fund monies would tend to further reduce any potential jeopardy to the long-term persistence of the population.

Project-specific mitigation measures for Big Horn Sheep and Desert Pupfish have reduced the potential for adverse impacts to below the level of significance for these two species. Evaluation of comparable landfill projects in the Southern California desert region or other

actions/projects within the vicinity of the proposed Eagle Mountain Project has identified no potential to adversely affect the long-term viability or persistence of these species, when considered in conjunction with the proposed Project. Consequently, implementation of the proposed Project is not considered to constitute a cumulatively significant impact from a regional perspective.

There appears to be a potential for the Eagle Mountain Project, in combination with the ECEC hydroelectric project, to result in cumulative impacts on certain biological resources in the area during the Year-5-through-Year-50 time horizon. Concentrations of Alverson's foxtail cactus that occur locally would be impacted by both projects. Although loss of individuals of this species could affect the persistence of the local population, specific mitigation measures for the proposed Project would reduce specific impacts to below the level of significance. Consequently, this loss is not considered to be a significant adverse impact from a regional perspective.

An increase in food sources (landfill) and water (ECEC reservoir) resource availability could result in higher populations of predators and increased desert tortoise mortality from juvenile predation. With implementation of suitable mitigation measures for the landfill (see Section 4.7) and use of floating covers on the reservoirs, however, it is anticipated that the potential cumulative impacts of these two projects would not be significant. These mitigation measures (e.g., daily landfill cover, Common Raven monitoring repellent program, and prohibition of access to water holes) would effectively limit the potential for increases in predator populations.

Proposed Project and Other Projects with Similar Characteristics and Environmental Impacts

The proposed Project would be considered to result in a potential cumulatively significant impact if, when considered collectively with the other desert landfill projects identified previously in this subsection, it exceeds the thresholds of significance for biological resources as defined and described in Section 4.7 of this EIS/EIR. Generally, such impacts would be considered significant if the proposed Project substantially: (1) affects a rare or endangered species or habitat of the species; (2) interferes with the movement of any resident or migratory species; (3) diminishes habitat for fish, wildlife, or plants; or (4) degrades water quality or depletes groundwater resources.

The proposed Project, as well as each of the other desert landfill projects, contains design, construction, and operational measures that will mitigate or minimize potential biological resource impacts. The Eagle Mountain Project and other desert landfill project sites represent discrete, noncontiguous, and widely separated habitat areas. The total area of net cumulative impact from these projects is expected to be small, relative to the total habitat area of those wildlife populations potentially affected. Mitigation measures associated with the Eagle Mountain Project are discussed in Section 4.7 of this EIS/EIR. Although these three projects could collectively contribute to the loss of habitat for some species, the cumulative impacts on biological resources are not considered significant because of the mitigation measures

associated with these projects and because these projects are widely dispersed rather than concentrated in one area.

5.5.2.8 Growth Inducement and Socioeconomics

Proposed Project and Other Projects Located Within Its Vicinity

Eagle Crest Energy Company

As noted in Section 5.2.4, construction and operation of the ECEC hydroelectric project is anticipated to occur in the Year-5-to-50 operational period of the Eagle Mountain Project. Construction of the ECEC project is expected to occur over a 5-year period, with a peak monthly employment of up to 462 construction workers occurring in the fourth year (ECEC 1994). ECEC has stated that most of the general labor required during construction would be filled from the labor pool within the potentially impacted area (i.e., Eagle Mountain Townsite, Lake Tamarisk, Desert Center, Blythe, Coachella, Indio, Palm Desert, Cathedral City, and Palm Springs). ECEC further has assumed that nonlocal construction workers will reside close to the ECEC project site and will likely commute. Therefore, ECEC anticipates an immigration of nonlocal workers to meet the project manpower requirements, many of whom are expected to make use of local housing. Current ECEC estimates of peak construction work force and nonlocal workers indicate that, during the peak period (Year 4), approximately 200 workers would require local, short-term housing accommodations.

Aside from potential excess housing capacity at the Eagle Mountain Townsite (see Section 4.5), ECEC has noted that approximately 27,600 vacant housing units (single family, multiple family, and mobile homes), as well as approximately 14,200 hotel/motel rooms, are available within the potentially impacted area noted above (ECEC, 1994). Consequently, there appears to be adequate and sufficient housing resources to accommodate both ECEC nonlocal construction workers and Eagle Mountain Project permanent employees. In addition, because no new ECEC-related housing construction is anticipated for the Townsite, it is anticipated that public services (water, sewer, electricity, and waste) also would be adequate.

ECEC has estimated a total construction payroll of approximately $128,615,000. A portion of this payroll could reasonably be expected to flow into the local community. Consequently, in concert with the proposed Project, the ECEC facility would result in a net positive cumulative impact to the local and regional economy.

Joshua Tree National Park

Visitor use of JTNP is estimated to increase to more than 4 million visitors per year during this period. If the proposed action of the JTNP General Management Plan were implemented, staffing at the park would double (from approximately 70 full-time equivalents to 142 full-time equivalents).

Both the Eagle Mountain Project and JTNP will contribute additional dollars to the regional economy and contribute to the creation of additional jobs providing goods, materials, and support services required by both the proposed Project, JTNP, staff, and visitors. These monies will, in turn, circulate through the regional economy creating additional employment opportunities, contribute to taxable sales, and support other governmental and public services that may be required.

Proposed Project and Other Projects with Similar Characteristics and Environmental Impacts

The proposed Project would be considered to result in a potential cumulatively significant impact if, when considered collectively with the other desert landfill projects identified previously in this subsection, it exceeds the thresholds of significance for growth inducement/socioeconomics as defined and described in Section 4.8 of this EIS/EIR. The Eagle Mountain Landfill Project, collectively with the La Paz County Regional Landfill, Rail Cycle-Bolo Station Landfill and the Mesquite Regional Landfill projects, would not be expected to result in potential adverse growth inducing or socioeconomic impacts that are considered cumulative in character due to their discrete, noncontiguous, and spatially distant nature.

5.5.2.9 Geology and Mineral Resources

Proposed Project and Other Projects Located Within Its Vicinity

The Eagle Mountain Landfill Project, as well as other projects proposed by the NPS in JTNP, would not generate potential impacts to geology and mineral resources that are considered cumulative in character. Because the proposed ECEC project would not be constructed or operational during the Year-1-through-Year-5 time period, no cumulative impacts on geology and mineral resources would be generated.

The proposed Eagle Mountain Project will not create any geologic hazards that could adversely affect the public or local infrastructure, and will not contribute cumulative geological or mineral impacts. The proposed ECEC hydroelectric project, however, could create a geologic hazard associated with unstable sidesteps in the proposed reservoir zone. While the movement of these slopes is not a defined hazard, rock materials falling into the reservoir could be of sufficient quantity to result in excessive wave action, which could damage the reservoir lining and exposed facilities. Damage to the reservoir lining could result in accelerated seepage from the reservoir zone and cause migration of groundwater toward the landfill. This groundwater could have an impact on the groundwater monitoring and liner system. Although the potential for this event to occur is not definitive, environmental documents prepared by ECEC acknowledge that the slopes of the reservoir are subject to failure and could cause excessive wave action with potentially adverse consequences to the reservoir lining (ECEC, 1993). The cumulative impact will be dependent on mitigation measures defined by FERC.

The combined acreage of the proposed Project and ECEC hydroelectric project would encompass about 6,000 acres. These lands contain iron ore resources of potential commercial value. With implementation of the two projects, these mineral reserves would be removed from future potential extraction. On the basis of current economic trends, however, it is unknown whether the mining and extraction of these resources would become economically viable. Assuming that these mineral resources would not continue to be economically mined during the Eagle Mountain Project's lifetime, no cumulative impact to local mineral resources would occur with implementation of these two projects. If, however, these reserves could be extracted in a feasible manner, the projects could collectively contribute to a small decrease (i.e., less than 1 percent) in proven iron ore reserves available in the United States. This small percentage is not significant relative to total United States reserves.

Proposed Project and Other Projects with Similar Characteristics and Environmental Impacts

The proposed Project would be considered to result in a potential cumulatively significant impact if, when considered collectively with the other desert landfill projects identified previously in this subsection, it exceeds the thresholds of significance for geology and mineral resources as defined and described in Section 4.9 of this EIS/EIR.

No mineral resources of economic value have been identified beneath the proposed Mesquite, La Paz, Rail-Cycle Bolo Station, or Hidden Valley landfill project sites. There are approximately 170 million tons of economically recoverable iron ore at the Eagle Mountain mine. The proposed Project would preclude recovery of tons of the iron ore due to burial by landfilling. The remaining ore would be accessible and could be recovered with the appropriate mining techniques. The total amount of ore remaining at the Eagle Mountain site amounts to less than 1 percent of the United States reserves of iron. The impacts of landfilling on mineral resources could be satisfactorily mitigated by domestic and global reserves. The impacts to mineral resources would be below the level of significance.

5.5.2.10 Visual Resources

The landfill operations and the renovation of the Townsite (for the Eagle Mountain Project) and the proposed reservoir (for the ECEC hydroelectric project) would not have a cumulatively significant adverse impact on the visual environment (see Section 4.10). Only the ECEC-proposed transmission line would contribute to potential significant impacts on visual resources in the area. Because there are existing transmission lines in the vicinity (i.e., throughout Chuckwalla Valley) and because the ECEC transmission line would extend about 80 miles from its proposed site, the impacts associated with the ECEC project would be isolated by distance from the proposed Eagle Mountain Project. Therefore, it is concluded that although these two projects were not separated by considerable distance, the portion of the ECEC project that could contribute to visual resource impacts would be isolated from the proposed Eagle Mountain Project operations and would not act in a cumulative manner on regional visual resources.

The existing conditions for windblown debris and nighttime lighting are described in Sections 3.10.2 and 3.10.3, respectively. The Project-related impacts from windblown debris and nighttime lighting are presented in Sections 4.10.3 and 4.10.4, respectively, including the mitigation measures for windblown trash. The Project mitigation measures will eliminate or minimize potential litter from the landfill, and the Project will not significantly contribute to litter from other sources in the area. Nighttime lighting of the facility will be in an area already intensely lighted at night from the correctional facility in the Townsite, and light levels will not increase significantly in the Project vicinity.

5.5.2.11 Wilderness and Recreational Resources

These projects, for the most part, are separated by substantial distances and, therefore, would not act in a cumulative manner to alter the visual landscape. Although the desert landfill projects could generate significant or nonsignificant impacts to the local visual character of their own immediate project vicinity, they would not act in a cumulative manner to generate greater or more widespread impacts to the visual resources of the area due to their discrete, noncontiguous, and spatially distant nature.

Because of the distance between each project, the variety of recreational opportunities offered at each of the project sites, and the localized character of potential impacts that each project would generate, these projects would not generate cumulative impacts on regional wilderness or recreational resources found in the area.

5.5.2.12 Cultural Resources

Impacts of the Eagle Mountain Project and the ECEC hydroelectric project on cultural resources were determined to be site-specific, potentially affecting several different and unrelated cultural resources in their immediate vicinity. There is no evidence to indicate that the cultural resources affected by these projects are related or would constitute a larger cultural resource district, the integrity of which is dependent on the values present at these sites (see Section 4.14). There is little documentation, however, about effects of the proposed ECEC project. Because the impacts on cultural resources are limited to those sites in the immediate vicinity of their respective projects, the impacts would be mitigated as part of the implementation of the respective projects. In addition, because there is no evidence to indicate a critical relationship among the various cultural resources affected, no cumulative impact to cultural resources would be expected to occur with implementation of these projects because of their discrete, noncontiguous, and spatially distant nature.

5.5.2.13 Energy

Proposed Project and Other Projects Located Within Its Vicinity

ECEC Hydroelectric Project

From the standpoint of energy supply issues, the proposed Eagle Mountain Project would result in a significant impact to energy resources if, in combination with the proposed ECEC hydroelectric project, it cumulatively uses energy in a wasteful or inefficient manner (e.g., requires substantial expansion of the existing energy supply infrastructure or substantial increase in fuel consumption).

In comparison to the ECEC hydroelectric project, the potential cumulative energy impact of the proposed Eagle Mountain Project relates to electricity consumption. As detailed in Section 4.4, Section 4.16, and Appendix E, operation of the ECEC hydroelectric project will consume approximately 4.81 x 10^6 MW-hr of electrical energy annually, primarily to pump water into storage during off-peak hours for subsequent release to generate electricity. In comparison, the approximate 8.47 x 10^3 MW-hr/yr of electrical energy consumed by the proposed Eagle Mountain Project represents less than 0.2 percent of the annual ECEC electrical energy consumption. The cumulative annual electrical energy consumption of the two projects (4.82 x 10^6 MW-hr/yr) is several orders of magnitude less than 1 percent of the 1990 annual SCAB electrical energy consumption of 117,724 gigawatt hours (gWh) or 11.7 x 10^{10} kilowatt hours (kWh). Consequently, from the standpoint of energy issues, the potential for cumulative impacts with the ECEC hydroelectric project is not considered to be significant.

Joshua Tree National Park

In conjunction with JTNP projects, the potential cumulative energy impact of the proposed Project relates primarily to transportation fuel energy consumption. As noted in Section 4.16, the proposed Project would create a new fuel energy end-use of approximately 2.5 x 10^{12} Btu/yr, which represents approximately 0.3 percent of the historic 1990 and projected 2000 SCAB mobile source fuel consumption (7.9 and 8.3 x 10^{14} Btu, respectively). An additional 2,000,000 visitor vehicles per year at JTNP would consume approximately 1.25 x 10^{12} Btu/yr (assuming 150-mile round-trip per vehicle at 30 miles per gallon [mpg]), for a total cumulative transportation-related energy consumption of approximately 3.75 x 10^{12} Btu/yr. This represents approximately 0.45 percent of the historic 1990 and projected 2000 SCAB mobile source fuel consumption. Consequently, from the standpoint of transportation energy issues, the potential for cumulative impacts with JTNP development is not considered to be significant.

Proposed Project and Other Projects with Similar Characteristics and Environmental Impacts

The proposed Project would be considered to result in a potential cumulatively significant impact if, when considered collectively with the other desert landfill projects identified previously in this subsection, it exceeds the thresholds of significance for energy consumption/generation as defined and described in Section 4.16 of this EIS/EIR.

In conjunction with the other desert regional landfill projects, the potential cumulative energy impact of the proposed Project relates primarily to rail transportation fuel energy consumption. The amount of waste produced (and thus disposed of) is not determined by available landfill capacity; rather it is determined by the amount of waste generated. As a result, the future choices that individual areas in Southern California make about their waste disposal practices will affect the distribution of waste among the proposed landfill projects, not the total amount of waste handled. Consequently, the regional fuel consumption impacts from these projects are expected to be approximately constant, regardless of the number of projects built and how the waste is distributed among them.

As shown in Section 4.16, the proposed Project would create a new fuel energy end-use of approximately 2.5×10^{12} Btu/yr, which represents approximately 0.3 percent of the historic 1990 and projected 2000 SCAB mobile source fuel consumption (7.9 and 8.3×10^{14} Btu, respectively). Consequently, from the standpoint of transportation energy issues, the potential for cumulative impacts with the other regional landfill projects would not be expected to result in significant additional potential impacts to energy resources.

6.0 The Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

The California Environmental Quality Act (CEQA) Guidelines contain "Mandatory Findings of Significance," which are criteria developed to determine whether a proposed project could have a significant effect on the environment. Under CEQA, a Lead Agency is required to find that a project could have a significant effect on the environment when, among other conditions, the project has the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals [Section 15065 (b)].

6.1 Short-Term Environmental Goals and Effects

The magnitude of the proposed Eagle Mountain Project is greater than most contemporary projects. More than 2,000 acres would be directly affected by the proposed Project, and several thousand more are either within the leasehold of Mine Reclamation Corporation (MRC) or in the adjacent Eagle Mountain Townsite. The estimated active life of the landfill is 100 years, substantially longer than other conventional landfills or similar public works projects. After formal closure of the landfill, maintenance and monitoring activities would continue for at least several decades. When measured by human terms, the Project would outlast most foreseeable activities, regulations, developments, and land uses. Relative to certain components of the natural environment, however, the Project is indeed short term.

Although the landfill portion of the Project is designed for long-term operation, there are short-term goals and effects associated with its operation. One of the goals of developing regional municipal solid waste landfills, such as the proposed project, is to minimize environmental impacts by reducing the reliance on a greater number of smaller local landfills. The development of such landfills would meet the goals set forth by the Southern California Association of Governments (SCAG), the Bureau of Land Management (BLM), and the County of Riverside (County) regarding the productive and environmentally sensitive use of land resources and environmentally safe land disposal of municipal solid waste. The short-term employment, expenditures, and tax revenue would benefit local citizens by providing income that could be invested by individuals.

6.2 Long-Term Environmental Goals and Effects

The four most important topic areas in which the potential long-term effects of the Project are most critical are air quality, water quality, biological resources, and public health and safety.

6.2.1 Groundwater Quality

Groundwater within the watershed of the 870-square-mile Chuckwalla Valley Groundwater Basin (Chuckwalla Basin) is essentially a nonrenewable resource. As noted in Section 3.1, Groundwater Quality and Use, groundwater recharge generally occurs from subsurface inflow from adjacent groundwater basins, infiltration of local precipitation, and subsurface inflow from underlying or adjacent bedrock aquifers associated with the various mountains that rim the Chuckwalla Basin. Although local groundwater quality is considered poor (i.e., it does not meet federal and state drinking water standards), the groundwater is used for irrigation and as a potable source by some residents.

Although a groundwater monitoring system will be constructed around the perimeter of the landfill and underneath the liner system of the proposed Project to provide indications of any changes to the water quality that might have occurred due to an escape of liquids or gas from the landfill, groundwater contamination of the Chuckwalla Basin, if it were to occur, would be of very long-term significance. Five potential impacts have been identified that could result in either degradation of groundwater quality or the contamination of a public water supply:

- Leachate release
- Contaminant release to groundwater from landfill support facilities
- Contaminant release to groundwater from Townsite facilities
- Groundwater quality degradation as a result of significant groundwater depletion
- Water quality degradation of the Colorado River and groundwater in the Coachella Valley

The Project includes design measures and conditions for protecting groundwater quality. The low-permeability liner leachate collection and treatment system, required monitoring wells, vadose zone monitoring, final cap closure system, and regulatory oversight are measures that serve to reduce the potential for groundwater contamination to a level that is not significant. Two other factors not imposed by regulations also reduce the potential impact: (1) the processing of virtually all the municipal waste for the Project through material recovery facilities (MRFs) or transfer stations (TS), would remove much of the refuse with high moisture contents, and (2) the arid climate of the Project site reduces the potential for leachate generation and migration of leachate from the landfill. Thus, the potential for a long-term effect on groundwater quality has been reduced to a level that is below significance.

6.2.2 Biological Resources

As noted in Section 4.7, Biological Resources, the proposed action includes measures that will protect or enhance biological resources in the vicinity of the proposed Project. These measures include: (1) a land exchange of disturbed BLM-administered mining lands for high-quality wildlife species habitat; (2) funding for construction of a pool to accommodate an experimental population of the Salt Creek pupfish at the Deep Canyon Reserve; and

(3) collection of a open space mitigation fee that would be used to study and monitor the effects of the landfill project and acquire additional lands in the region that provide high quality habitat. Each of these measures contributes to a significant overall beneficial impact of the Proposed Action, by providing for the long-term protection and management of special-status species in the region.

Certain potential biological effects of the Project involve general habitat considerations that cannot be addressed through a simple survey and implementation of response measures. For example, the immediate effects of construction along the railroad line and resumption of rail operations on desert tortoise could be assessed and reduced through surveys and improvements as proposed within the Project. The long-term effects on desert tortoise populations, however, are less certain. The loss of four watering holes would eliminate the primary source of water for the local population of Nelson's bighorn sheep. The immediate effect of removal of bighorn sheep water sources could be offset by replacing the water sources. The long-term habitat effects of the Project are not as clear. For this reason, the mitigation of certain potential biological impacts of the Project depends on subsequent surveys and monitoring as the Project is implemented. The studies themselves are not mitigation, but they are necessary to clarify longer-term effects of the Project and to develop appropriate responses to those effects.

Of the primary threats to biodiversity identified by the Council on Environmental Quality (CEQA) (see Section 3.7.4 of this EIS/EIR), the proposed action could affect biodiversity primarily as a result of loss of habitat, habitat fragmentation, changes in the relationship between species in the form of increases in predator/scavenger populations in response to increased food availability at the landfill site, and increased road kills. Future habitat fragmentation and degradation in the vicinity of the Project would be reduced through extensive habitat acquisition by the open space mitigation fund, funded through a fee on waste disposed of at the landfill. Reduced future habitat loss through habitat acquisition and the resulting protection of ecological function would offset some of the effects of habitat fragmentation attributable to the Proposed Action. Acquisition of extensive high quality habitat is considered a significant beneficial impact protecting biodiversity and ecosystem function in the region of the Project.

As noted in Section 4.7, the National Park Service has expressed concern regarding atmospheric nitrate deposition from sources such as agricultural ammonia/ammonium, animal wastes, and fossil fuel combustion. Increasing nitrate deposition is of concern in desert ecosystems because increased nitrogen could potentially allow the establishment and spread of plant species that otherwise would not occur in the desert because of nitrogen limitations. The small amounts of nitrate produced as a result of fossil fuel use associated with landfill operation would be eclipsed by the amount of nitrate produced in the Los Angeles Basin and in urban desert communities closer to the landfill, as well as by Joshua Tree National Park visitor use, which is expected to be a greater source of nitrate production than that produced by landfill operations (see Chapter 5, Cumulative Impacts). Consequently, nitrate deposition associated with landfill use operations is expected to have no long-term effect on the ecosystem function at Joshua Tree National Park.

6.2.3 Public Health and Safety

Although municipal solid waste streams contain small quantities of waste that are technically defined as hazardous, the quantity of this material arriving at the landfills is very small and effectively isolated by the much larger mass of nonhazardous solid waste. The potential for public exposure to hazardous wastes in the solid waste stream at the Project site would be reduced by the offsite MRF/TS sorting process.

Potential impacts to public health and safety could result from hazards associated with migration of landfill gas (LFG) or LFG condensate beyond the Project boundaries. Uncontrolled LFG migration through cracks and fissures in native bedrock, soils, fill slopes, or landfill cover material could result in explosion hazards. Although there also is a potential health hazard posed by the uncontrolled subsurface migration of LFG-entrained volatile organic compounds (VOCs), the proposed Project's LFG management system, comprising both LFG and condensate collection and monitoring, is designed to handle the volume of LFG that would be generated as the municipal solid waste degrades. These measures would lower the potential public health and safety effects of LFG and LFG condensate to below the level of significance.

The health and safety of landfill employees and Townsite residents could be affected by subsurface or surface fires on the proposed Project site; any fires that are generated have the potential to migrate offsite. The primary hazards of a fire onsite are the potential for burn injuries and smoke. Surface fires generally would be small, of short duration, and relatively easy to control. Subsurface fires are unlikely to occur because the liner system eliminates the introduction of air to the subsurface. Any potential surface air flow would be controlled by proper operation of the LFG recovery or migration control systems. Right-of-way fires, caused by sparks from the brakes of trains traveling through the arid desert climate, would be controlled by an active vegetation/weed abatement policy.

Because of the nature of the proposed Project (i.e., the handling and disposal of solid waste), there is a potential for public health and safety impacts related to the presence of vectors (i.e., animals, birds, and insects). The compaction of waste and application of a daily earthen cover as part of the Project design is the primary measure to control vector populations at landfills. Additional measures such as installing appropriate barriers have been incorporated in the Project design to control local bird populations. The mitigation measures incorporated into the proposed Project design would reduce the potential for public health and safety impacts to below the level of significance.

Safety impacts at the proposed Project site could arise from the operation of heavy equipment and collection trucks and from exposure to objects and materials contained in the waste. Bodily injury from vehicles, dust inhalation, and elevated noise levels are also potential impacts. Measures to protect workers, which are incorporated as part of the Project, include training (onsite safety, enclosed/air conditioned landfill equipment, first aid, accident prevention, hazardous waste recognition, and emergency response measures); development and

implementation of a comprehensive Injury and Illness Prevention Program; and provision of appropriate safety equipment (e.g., dust masks, ear plugs, goggles, gloves, and orange safety vests). Communication equipment will also be provided between operations areas, administration facilities, and any necessary emergency responders.

6.2.4 Air Quality

As discussed in Section 4.4, Air Quality, emissions from the proposed Project would be associated with activities pertaining to stationary sources and mobile equipment. Emissions are also generated by short-term construction activities, landfill road use, mine tailing reclamation, solid waste transfer, and activities connected with Townsite renovation and repopulation. Emissions during the initial construction will be generated from the extension of the existing Eagle Mountain Road; construction of the Phase I Rail Yard, reconstruction of the existing Eagle Mountain Railroad; preparation of the first phase of the landfill; and Townsite renovation. During operations, emissions will be attributable to solid waste transport via trains and trucks.

The air quality analysis indicates that, in the absence of mitigation measures, the proposed Project is not expected to result in a violation of the state or national standards for nitrogen dioxide (NO_2) SO_2, and CO, even in combination with background ambient levels measured at the Project site. For PM_{10}, Project impacts alone are not expected to exceed the state or national standards. The state and national 24-hour average PM_{10} standards, however, are exceeded in the absence of the Project. The impacts of the Project exacerbate violations of the PM_{10} standard. The initial construction period will be short-term (9 months) and each year, additional liner systems will be constructed, which will require a construction period of about 2 to 3 months. These activities are of short duration and will not have a long-term impact on the environment.

The Project could also have an impact on regional haze. The results of analysis show that the maximum regional haze impact for the proposed Project is well below the threshold of 1.0 dv. Acid deposition impact from SO_2 is not considered to be significant. Ozone increases caused by the Project itself are not considered to be significant and will not contribute significantly to this regional transport problem. Air quality impacts on vegetation can result in a decline in plant productivity. Emissions from the proposed Project will result in ambient NO_x levels far below the threshold level for damage identified by Wark and Warner (1976). In addition, the emissions of SO_2 from the proposed Project will not add significantly to these concentrations and, therefore, no adverse impacts will result from the proposed Project.

7.0 Significant Irreversible Environmental Changes

For most landfill or other land development projects, the most significant irreversible commitment necessary is the land itself on which a project is located. For the Eagle Mountain Project, however, the land in question has already been subjected to severe disturbance through past mining activities. Its commitment to the Project does not represent a major loss of land usable for other purposes or usable as biological habitat. The irreversible change in the land has already occurred, and the Project involves a beneficial use and reclamation of disturbed land.

The materials and energy necessary to implement the Project will be irreversibly committed. The material commitment is not considered to be significant; it involves refuse and includes a major reuse of spoil material onsite as part of the Project. The proposed Project is energy-intensive, because of the fuel required for long-distance transport of MSW; but the alternative to the proposed Project (i.e., continued conventional MSW collection, transport and disposal to existing regional landfills) is also an energy-intensive undertaking. As conventional urban landfills in the seven-county wasteshed service area reach design capacity, the consumption of more and more energy will be necessary to transport refuse to increasingly distant landfills. In addition, the Eagle Mountain Project has several factors that, in combination, reduce its net energy consumption relative to other potential disposal options to a level of nonsignificance. These factors include:

- An emphasis on rail versus truck transport
- An existing large disposal excavation and available cover material (i.e. tailing piles) onsite
- The potential to recover energy by landfill gas extraction and combustion.

There is the potential for covering mineral resources in the Project area with the landfilled material. This would represent a commitment and exclusion of these resources to further development. The phasing of the proposed Project, however, would allow for the removal of these resources, if their recovery is determined to be economically feasible in the next 70 years. Currently, removing access to these mineral resources is not considered to be a significant irreversible change.

As noted in Section 4.4 and Appendix E, the proposed Project would be expected to have a significant effect on air quality in the region after mitigation, when compared to a "baseline" of zero emissions/concentrations for criteria pollutants. This zero emission baseline, however, does not take into consideration the air emissions associated with current and ongoing MSW collection, transport, and disposal activities within the seven-county wasteshed. These are activities that will continue whether or not the proposed Project is constructed. In addition, the proposed Project could result in air quality benefits in the South Coast Air Basin (SCAB) for ozone, carbon monoxide, and particulate matter, at the expense of increased impacts in desert areas.

7.0 Significant Irreversible Environmental Changes

For most landfill or other land development projects, the most significant irreversible commitment necessary is the land itself on which a project is located. For the Eagle Mountain Project, however, the land in question has already been subjected to severe disturbance through past mining activities. Its commitment to the Project does not represent a major loss of land usable for other purposes or usable to biological habitat. The irreversible change in the land has already occurred, and the Project involves a beneficial use and reclamation of disturbed land.

The materials and energy necessary to implement the Project will be irreversibly committed. The material commitment is not considered to be significant since it involves prime and lucrative a major cause of good material onsite as part of the Project. The proposed Project is energy-intensive, because of the fuel required for long-distance transport of MSW, but the alternative to the proposed Project (i.e., continued conventional MSW collection, transport and disposal in existing regional landfills) is also an energy-intensive undertaking. As conventional urban landfills in the seven-county wasteshed service area reach design capacity, the consumption of more and more energy will be necessary to transport refuse to increasingly distant landfills. In addition, the Eagle Mountain Project has several factors that, in combination, reduce its net energy consumption relative to other potential disposal options to a level of insignificance. These factors include:

- An emphasis on rail versus truck transport.
- An existing large disposal excavation and available cover material (i.e. mining pits) onsite.
- The potential to recover energy by landfill gas extraction and combustion.

There is the potential for covering mineral resources in the Project area with the landfilled material. This would represent a small amount and extention of these resources to further development. The disposing of the composite Project, however, would allow for the removal of these resources, if their recovery is determined to be economically feasible in the near 30 years. Currently, removing access to these mineral resources is not considered to be a significant irreversible change.

As noted in Section 4.0 and Appendix E, the proposed Project would be expected to have a significant effect on air quality in the region even compliance, when compared to a "baseline" of zero environmental concentrations for criteria pollutants. This zero emission baseline, however, does not take into consideration the air emissions associated with current and ongoing MSW collection, transport, and disposal activities within the seven-county wasteshed. These are activities that will continue whether or not the proposed Project is constructed. In addition, the proposed Project could result in air quality benefits to the South Coast Air Basin (SCAB) for ozone, carbon monoxide, and particulate matter, at the expense of increased impacts in distant areas.

8.0 List of Preparers

Original drafts of this EIS/EIR have been prepared on behalf of the U.S. Bureau of Land Management and the County of Riverside by staff of CH2M HILL in Santa Ana, California, and its subconsultants. CH2M HILL staff who participated in the preparation of this document include:

Staff

Cox, James
CH2M HILL, Corvallis, Oregon

- M.A., History and History Preservation, Oregon State University, Corvallis
- B.A., Anthropology, University of Oregon, Eugene
- Years of Experience: 18
- Role: Cultural Resources Analysis

Foreman, Terry L.
CH2M HILL, Thousand Oaks, California

- M.A., Geology, University of Missouri, Columbia
- B.S., Geology, University of Missouri, Columbia
- Years of Experience: 16
- Role: Senior Technical Advisor

Freas, Kathy E.
CH2M HILL, Sacramento, California

- Ph.D., Population Biology, New Mexico State University
- M.S., Biology, New Mexico State University
- B.S., Wildlife Biology, Michigan State University
- Years of Experience: 15
- Role: Biological Task Leader

Hausknecht, Brian J.
CH2M HILL, San Diego, California

- M.S., Environmental Engineering, University of Florida
- B.A., Biology, Jacksonville University, Florida
- Years of Experience: 16
- Role: Hazardous Materials Analysis

Hunn Jr., Richard C.
CH2M HILL, Sacramento, California

- M.S., Natural Resource Planning, Humboldt State University, California
- B.S., Natural Resource Studies, University of California, Berkeley
- Years of Experience: 22
- Role: Cumulative Effects Analysis

Irish, James
CH2M HILL, Seattle, Washington

- M.L.A., Landscape Architecture, University of Washington
- B.A., Philosophy, State University of New York at Oswego
- Years of Experience: 18
- Role: Visual Resources Analysis

Jacobs, Robert R.
CH2M HILL, Santa Ana, California

- M.S., Civil Engineering, University of California, Berkeley
- B.S., Civil Engineering, University of California, Berkeley
- Years of Experience: 28
- Role: Solid Waste Operations Analysis

Kemper, Charles C.
CH2M HILL, San Francisco, California

- B.S., Civil Engineering, Oregon State University
- M.B.A. Program, Seattle University, Washington
- Years of Experience: 16
- Role: Senior Consultant

Lewis, Frank
CH2M HILL, Thousand Oaks, California

- M.S., Hydrogeology, University of Arizona, Tucson
- B.A., Physical Geography/Ecosystem Analysis, University of California, Los Angeles
- Years of Experience: 15
- Role: Groundwater Analysis

Look, Kimo T.
CH2M HILL, Santa Ana, California

- M.S., Civil Engineering, Colorado State University
- B.S., Civil Engineering, University of Massachusetts, Amherst
- Years of Experience: 13
- Role: Surface Water Analysis

McNamara, John
CH2M HILL, Santa Ana, California

- M.S., Engineering Geology/Hydrogeology, California State University, Los Angeles
- B.S., Geology, California State University, Los Angeles
- Years of Experience: 11
- Role: Geology and Mineral Resources

O'Hara, Sheila
CH2M HILL, (Contracted with TRC)

- B.A., English, California State University, Fullerton
- Years of Experience: 20
- Role: Document Production Coordinator

Peters, Thomas L.
CH2M HILL, Santa Ana, California

- B.A., Environmental Studies and Sociology, University of California, Santa Barbara
- Years of Experience: 22
- Role: Project Manager

Price, Robert O.
CH2M HILL, Santa Ana, California

- B.S., Zoology, Michigan State University, East Lansing
- Years of Experience: 18
- Role: Public Health and Safety Analysis; Growth Inducement and Socioeconomics

Roberts, Christine L.
CH2M HILL, Santa Ana, California

- M.C.P., Environmental Planning and Policy, Massachusetts Institute of Technology, Cambridge
- B.A., Political Science and Public Service, University of California, Davis
- Years of Experience: 9
- Role: Assistant Project Manager, Wilderness and Recreation Analysis

Shapiro, Jill
CH2M HILL, San Francisco, California

- Ph.D., Physical and Inorganic Chemistry, Bryn Mawr College
- M.A., Physical and Inorganic Chemistry, Bryn Mawr College
- Years of Experience: 22
- Role: Senior Consultant

Tovar, Henry M.
CH2M HILL, Santa Ana, California

- B.S., Electrical Engineering, University of California, Berkeley, Berkeley, California
- Years of Experience: 16
- Role: Energy Analysis

Whitaker, Roger S.
CH2M HILL, Portland, Oregon

- B.S., Mechanical Engineering, University of Washington
- Years of Experience: 5
- Role: Noise Analysis

Vollmar, Andy
CH2M HILL, Santa Ana, California

- Attended Indiana/Purdue University, Indianapolis
- Years of Experience: 23
- Role: Graphics

Yacyshyn, Michael B.
CH2M HILL, Santa Ana, California

- M.S., Geotechnical Engineering, University of California, Berkeley
- B.S., Civil Engineering, University of Massachusetts, Amherst
- Years of Experience: 16
- Role: Principal-in-Charge

The following subconsultants provided special technical analyses:

Circle Mountain Biological Consultants
Ed LaRue, Jr.
Sharon Dougherty

Sierra Research
Gary Rubenstein
Tom Blake
Tom Andrews
Mark Valdez

DKS
Doug Smith

Smith, Peroni & Fox
Michael Peroni

Roberta Greenwood Associates
Roberta Greenwood
John Foster

Independent Consultants
Alice Karl
Theodore Rado
Peter Woodman
Gilbert Goodlett

9.0 References Cited

Section 1.0

A Guide to Planning in California. Governor's Office of Planning and Research. March 1988.

Bureau of Land Management. California Desert Conservation Area, Draft Plan Alternatives and Environmental Impact Statement. February 1980.

———. California Desert Conservation Area, Final Plan Alternatives and Environmental Impact Statement. 1989.

———. California Desert District and County of Imperial Planning and Building Department. Environmental Impact Statement/Environmental Impact Report for the Proposed Mesquite Regional Landfill. 1994.

Bureau of Land Management and the County of Riverside. Final Environmental Impact Statement/Environmental Impact Report for the Proposed Eagle Mountain Landfill Project. Specific Plan No. 252. State Clearinghouse No. 8908413. June 1992.

California Code of Regulations, Title 23, Chapter 15.

California Integrated Waste Management Board (CIWMB). Interim Database Project. Estimated Average 1990 County Waste Stream Composition. Revised October 21, 1992.

Code of Federal Regulations, Subtitle D of Title 40.

County of Orange, Countywide Siting Element. Prepared by Orange County Integrated Waste Management Department and CH2M HILL (specifically Bob Jacobs). February 1995.

County of Riverside Siting Element, Preliminary Draft. Prepared by County of Riverside Waste Resource Management District. January, 1996.

County of San Bernardino Countywide Integrated Waste Management Plan Siting Element, Revised Final Draft. Prepared by County of San Bernardino Public Works Group, Solid Waste Management Department and Norcal/San Bernardino, Inc. November 1995.

County of San Diego Integrated Waste Management Plan Countywide Siting Element. Prepared by Department of Public Works, Solid Waste Division. August 1995.

County Sanitation Districts of Los Angeles County, U.S. Forestry Service, and Los Angeles County Department of Regional Planning. January 1995.

Countywide Siting Element of the Santa Barbara County Integrated Waste Management Plan, Second Draft. Prepared by Integrated Recycling, Inc. April 1996.

Kaiser. Surface Mining Reclamation Plan, Eagle Mountain Mine. 1978.

Los Angeles County Countywide Siting Element Preliminary Draft. Prepared by Los Angeles County Department of Public Works Environmental Programs Division. January 1996.

National Environmental Policy Act (NEPA) Handbook. Portland, Oregon: Bureau of Land Management. H-1790-1. October 25, 1988.

Southern California Association of Governments (SCAG). Integrated Solid and Hazardous Waste Transport in Southern California: Public Policy Issues, Implications, Options, and Implementation Strategies. August 1995.

Toward Ensuring Adequate Landfill Capacity. Integrated Waste Management Planning Study. May 1995.

Ventura County Integrated Waste Management Plan, Countywide Siting Element, Preliminary Draft. Prepared by County of Ventura, Solid Waste Management Department. August 1995.

Section 2.0

Kaiser. Surface Mining Reclamation Plan, Eagle Mountain Mine. 1978.

Metcalf and Eddy. *How to Assess Your Landfill for Mining: The Cautions.* March 1993.

Bureau of Land Management. The California Desert Conservation Area Plan. 1980.

Bureau of Land Management. National Environmental Policy Act Handbook, Subject H-1790-1, October 1988.

Bureau of Land Management. California Desert Conservation Area, Final Plan Alternatives and Environmental Impact Statement. 1989.

Bureau of Land Management and the County of Imperial. Final Environmental Impact Statement/Environmental Impact Report for the Proposed Mesquite Regional Landfill. June 1994a.

Bureau of Land Management and the County of San Bernardino. Final Environmental Impact Statement/Environmental Impact Report for the Rail Cycle-Bolo Station Landfill. August 1994b.

GeoSyntec. Report of Waste Discharge. Report submitted to Mine Reclamation Corporation. GeoSyntec Consultants, Huntington Beach, CA. 1992.

———. Report of Waste Discharge Supplemental Volume 1. Report submitted to Mine Reclamation Corporation. GeoSyntec Consultants, Huntington Beach, CA. March 1993a.

———. Report of Waste Discharge Supplemental Volumes 2A and 2B. Report submitted to Mine Reclamation Corporation. GeoSyntec Consultants, Huntington Beach, CA. December 1993b.

———. Geosynthetic Clay Liner System, Eagle Mountain Landfill. Report submitted to County of Riverside. GeoSyntec Consultants, Huntington Beach, CA. 1994.

Sections 3.1 and 4.1—Groundwater

Bureau of Land Management and the County of Riverside. Final Environmental Impact Statement/Environmental Impact Report for the Proposed Eagle Mountain Landfill Project. Specific Plan No. 252. State Clearinghouse No. 8908413. June 1992.

Bureau of Reclamation. Inland Basins Project, California-Nevada, Summary Report: Reconnaissance Investigations. 1972.

California Department of Water Resources (DWR). *California's Groundwater.* Bulletin 118. 135 pp. 1975.

———. Sources of Powerplant Cooling Water in the Desert Area of Southern California—Reconnaissance Study. Bulletin 91-24. 55p. 1979.

———. Water Well Standards: State of California. Bulletin 74-81. 1981.

———. Supplement to Bulletin 74-81. Bulletin 74-90. 1990.

Davis, S. N., and R. J. M. DeWiest. *Hydrogeology.* John Wiley & Sons, New York, NY. 463 pp. 1966.

Driscoll, F. G. *Groundwater and Wells*, Second Edition. Johnson Filtration Systems Inc., St. Paul, MN. 1087 pp. 1986.

Dunne, T., and L. B. Leopold. *Water in Environmental Planning.* W. H. Freeman & Co. San Francisco. 818 pp. 1978.

Environmental Protection Agency. The Hydrologic Evaluation of Landfill Performance (HELP) Model, Vol. 1, User's Guide Version I. EPA/530-SW-84-009. Washington, D.C. 120p. 1984a.

———. The Hydrologic Evaluation of Landfill Performance (HELP) Model, Vol. II, User's Guide Version 1. EPA/530-WE-84-010. Washington, D.C. 1984b.

———. Buzzard Spring, California, Riverside County. 7.5 Minute Series (Topographic) 33115-G4-TF-024. Scale 1:24,000. 1986.

———. Delineation of Wellhead Protection Areas in Fractured Rocks. EPA 570/9-91-009. Groundwater Protection Division, Office of Groundwater and Drinking Water. Washington D.C. 144 pp. 1991.

Freeze R. A., and J. A. Cherry. *Groundwater.* Prentice-Hall, Inc., Englewood Cliffs, NJ. 604 pp. 1979.

GeoSyntec. Report of Waste Discharge. Report submitted to Mine Reclamation Corporation. GeoSyntec Consultants, Huntington Beach, CA. 1992.

———. Report of Waste Discharge Supplemental Volume 1. Report submitted to Mine Reclamation Corporation. GeoSyntec Consultants, Huntington Beach, CA. March 1993a.

———. Report of Waste Discharge Supplemental Volumes 2A and 2B. Report submitted to Mine Reclamation Corporation. GeoSyntec Consultants, Huntington Beach, CA. December 1993b.

———. Evaluation of Select Ground-Water Impacts, Proposed Eagle Mountain Pumped-Storage Hydroelectric Project, Chuckwalla Aquifer, Riverside County, California. Prepared for Mine Reclamation Corporation. GeoSyntec Consultants, Huntington Beach, CA. 1995.

———. Ground-Water Investigation and Monitoring Summary Report, Eagle Mountain Landfill and Recycling Center, Riverside County, California. Report submitted to Mine Reclamation Corporation. GeoSyntec Consultants, Huntington Beach, CA. 1996.

Ham, Dr. R.K. The Potential for Gas Generation and Leachate Production at the Proposed Eagle Mountain Landfill. Mine Reclamation Corporation. 1990.

Hanson, James C. Consulting Engineers. Groundwater Condition—Eagle Mountain Area. Written correspondence to Dr. J. H. Birman, Geothermal Surveys, Inc. 1992.

Harder, E. C. Iron Ore Deposits of the Eagle Mountains. U.S. Geological Survey Bulletin 503. 81 pp. 1912.

Hemker, C. J. and H. van Elburg. MICRO-FEM, Microcomputer Multilayer Finite Element Groundwater Modeling, Version 2.5. Elandgracht 83, 1016 Amsterdam, Netherlands. 1995.

Keenan, J.D. Landfill Leachate Management. *Journal of Resource Management and Technology*, Vol. 14, No. 3, pp. 177-180. 1986.

Koehker, J. H., and M. J. Mallory. Addendum to Sources of Powerplant Cooling Water in the Desert Area of Southern California—Reconnaissance Study. U.S. Geological Survey Open-File Report 81-527. 28 pp. 1981.

Kunkel, F. Hydrologic and Geologic Reconnaissance of Pinto Basin, Joshua Tree National Monument, Riverside County, California. Geologic Survey Water-Supply Paper 1475-0. 1963.

Mann J. C. Groundwater Conditions in the Eagle Mountain Area. Report submitted to Kaiser Steel Corporation. John F. Mann, Jr. Consulting Geologist and Hydrologist. 1986.

Mendoza, C. A. and E. O. Frind. Advective-Dispersive Transport of Dense Organic Vapors in the Unsaturated Zone. Model Development. *Water Resources Research*, Vol. 26, No. 3, pp. 379-387. 1990a.

———. Advective-Dispersive Transport of Dense Organic Vapors in the Unsaturated Zone. Sensitivity Analysis. *Water Resources Research*, Vol. 26, No. 3, pp. 388-398. 1990b.

Mercer, J. W. and R. M. Cohen. A Review of Immiscible Fluids in the Subsurface: Properties, Models, Characterization and Remediation. *Journal of Contamination Hydrology*, 6 107-163. 1990.

Morrison Knudsen Corporation. Eagle Mountain Landfill and Recycling Center, Estimate of Water Usage. Paper to Mine Reclamation Corporation. 1995.

SCS Engineers. Background Ground Water Quality Monitoring Program, Eagle Mountain, California. 1990.

Stephens, R. D., N. B. Ball, and D. M. Mar. Pollutant Transport and Accumulation in a Multimedia Environment. A Multimedia Study of Hazardous Waste Landfill Gas Migration. Plenum Press, Los Angeles, California. 1986.

Todd, D. K. *Groundwater Hydrology*, Second Edition. John Wiley & Sons, New York, NY, 535 pp. 1980.

Wilson, R. P., and S. J. Owen-Joyce. Method to Identify Wells that Yield Water That Will Be Replaced by Colorado River Water in Arizona, California, Nevada, and Utah. U.S. Geological Survey, Water Resources Investigations Report 94-4005. 36 pp. 1994.

Woodward-Clyde Consultants. Construction Phase Services for Water Supply Wells, California State Prison, Wiley Well, Riverside County, California. Prepared for Tucker, Sadler, and Associates by Woodward-Clyde Consultants, Santa Ana, CA. 1988.

Sections 3.2 and 4.2—Public Health and Safety

Adest, G. A. *The Distribution and Abundance of Rodents in the Mission Canyon Landfill, Los Angeles, California*. Prepared for the Sanitation Districts of Los Angeles County. 1979a.

———. *Survival of Rattus in the Trash Collection and Sanitary Landfill Process*. Prepared for the Sanitation Districts of Los Angeles County. 1979b.

Bureau of Land Management. Level I Contaminant Survey Checklist (Serial No. CA 30070 FD) of Publicly Owned Lands Surrounding the Eagle Mountain Mine. September 1992.

Bureau of Land Management, California BLM. Level 1 Survey—Contaminant Survey Checklist of Proposed Real Estate Disposals, Selected Federal Lands. February 6, 1996.

California Integrated Waste Management Board (CIWMB). Interim Database Project. Estimated Average 1990 County Waste Stream Composition. Revised October 21, 1992.

County of Riverside. Comprehensive General Plan. pp. 365-366.25. 1988.

Department of Toxic Substances Control (DTSC). Complaint Inspection and Sampling Report—Eagle Mountain Mine. EPA ID No. CAD003934890. California Environmental Protection Agency. April 7, 1994a.

———. Complaint Inspection and Sampling Report—Eagle Mountain Mine, Addendum. California Environmental Protection Agency. 1994b.

Environmental Protection Agency (EPA). Correspondence from Donald C. White, Chief Field Operations Branch, EPA Region IX, to John Key, BLM. August 26, 1994.

Hamm, R. F. The Potential for Gas Generation and Leachate Production at the Proposed Eagle Mountain Landfill. July 1990.

Kutcher, S. R. An Entomological Survey of Fly Vectors: Canyon 8 Sanitary Landfill. Prepared for the Sanitation Districts of Los Angeles County. July-August. 1979a.

———. Comparative Occurrence of Fly Vectors: Canyon 8 Sanitary Landfill and Residential Locations. Prepared for the Sanitation Districts of Los Angeles County. November. 1979b.

URS Consultants. Federal Facility DA Review Under CERCLA Section 120. 1994.

Sections 3.3 and 4.3—Traffic and Transportation

Bezkorovainy, Georgy, and Holsinger. Optimum Hazard Index Formula for Railroad Crossing Protection for Lincoln, Nebraska. 18 pp. 1967.

Institute of Transportation Engineers. Trip Generation Manual, 5th edition. 1994.

Southern California Association of Governments (SCAG). The Feasibility of Hauling Solid Waste by Railroad from the San Gabriel Valley to Remote Disposal Sites. April 1988.

Transportation Research Board. Highway Capacity Manual, Special Report 209. Washington, D.C. 1994.

Section 3.4 and 4.4

California Air Resources Board, Research Division. The Atmospheric Acidity Protection Program: Annual Report to the Governor and the Legislature. 1991.

Environmental Protection Agency (EPA). Workbook for Plume Visual Impact Screening and Analysis (Revised). October 1992.

Sections 3.5 and 4.5 Land Use

Bureau of Land Management. The California Desert Conservation Area Plan. 1980.

Bureau of Land Management and the County of Riverside. Final Environmental Impact Statement/Environmental Impact Report for the Proposed Eagle Mountain Landfill Project. Specific Plan No. 252. State Clearinghouse No. 8908413. June 1992.

California, State of. Office of Planning and Research. California Environmental Quality Act (CEQA). 1989.

———. General Plan Guidelines. November 1990.

County of Riverside. Comprehensive General Plan. December 1989.

———. Solid Waste Management Plan. 1989.

———. Ordinance No. 348, Land Use Ordinance of Riverside County. April 1994.

Curtain. California Land Use and Planning Law. 1994.

Federal Land Policy and Management Act of 1976.

Kaiser. 1978 Surface Mining Reclamation Plan, Eagle Mountain Mine. 1978.

National Park Services. Natural Resources Management Guidelines—NPS 77. 1991.

———. Final General Management Plan, Development Concept Plans, Environmental Impact Report, Joshua Tree National Park, California. May 1995.

Remy, Thomas, Moose. Guide to the California Environmental Quality Act (CEQA). 1994.

———. Guide to the California Environmental Quality Act (CEQA). 1995 Supplement.

Smith, Peroni, & Fox. Eagle Mountain Landfill Specific Plan No. 305 (Working Draft).

———. Eagle Mountain Landfill Specific Plan No. 306 (Working Draft).

Sections 3.6 and 4.6 Surface Water Drainage and Flooding

Bureau of Land Management and the County of Riverside. Final Environmental Impact Statement/Environmental Impact Report for the Proposed Eagle Mountain Landfill Project. Specific Plan No. 252. State Clearinghouse No. 8908413. June 1992.

GeoSyntec. Report of Waste Discharge. 1992.

———. Report of Waste Discharge. Supplemental Volumes. 1993.

———. Evaluation of Select Ground-Water Impacts Proposed Eagle Mountain Pumped-Storage Hydroelectric Project, Chuckwalla Aquifer, Riverside County, California. Prepared for Mine Reclamation Corporation by GeoSyntec Consultants, Huntington Beach, CA. 1995.

Sections 3.7 and 4.7 Biological Resources

Abst, M. L. "Environmental and variation in life history traits of the chuckwalla, *Sauromalus obesus." Ecological Monographs*, 57(3), 1987, pp. 215-232. 1987.

Berry, K. H., A. P. Woodman, L. Nicholson, and B. L. Burge. The Distribution and Abundance of Desert Tortoises in the Chocolate Mountains Aerial Gunnery Range. Proceedings Symposium of the Desert Tortoise Council. Long Beach, CA. 1983.

Berry, K.H., T. Shields, A. P. Woodman, T. Campbell, J. Robertson, K. Bohuski, and A. Karl. Changes in Desert Tortoise Populations at the Desert Tortoise Natural Area Between 1979 and 1985. USDI Bureau of Land Management. California Desert District, Riverside, CA. 1986.

Berry, K. H. "Avian predation on the desert tortoise (*Gopherus agassizii)* in California." Report to Southern California Edison Company, USDI Bureau of Land Management. Riverside, CA. 1985.

———. "The status of the desert tortoise in California." Draft report to USDI Fish and Wildlife Service. USDI Bureau of Land Management. Riverside, CA. 1990.

Boarman, W. I. "Chapter 13. When a Native Predator Becomes a Pest: A Case Study." *In*: *Conservation and Resource Management.* S.K. Majumdar, E. W. Miller, D. E. Baker, E. K. Brown, J. R. Pratt, and R. F. Schmalz (editors). The Pennsylvania Academy of Science. 1993.

Boarman, W. I., and K. H. Berry. "Common Ravens in the southwestern United States, 1968-92." In: *Our Living Resources 1994—Birds.* National Biological Service. Riverside, CA. In press.

Boarman, W. I., and R. J. Camp. "Ravens use of anthropogenic resources in the western Mojave Desert." National Biological Service. Riverside, CA. In prep.

Brown, Patricia E. A Survey for Bats of the Eagle Mountain Project Site, Riverside County, California. Unpublished report for RECON. Bishop, CA. 1990.

———. A Winter Survey for Bats of the Eagle Mountain Project Site, Riverside County, California. Unpublished report for RECON. Bishop, CA. 1991.

———. Winter and Summer Baseline Surveys for Bats of the Eagle Mountain Project Site, Riverside County, California. Unpublished report for RECON. Bishop, CA. 1993.

Bureau of Land Management. Final Environmental Impact Statement and Proposed Plan for the California Desert Conservation Area. Volume B. Appendix III: Wilderness. pp. 616-628. Riverside, CA. 1980.

———. Salt Creek Pupfish/Rail Habitat Area of Critical Environmental Concern Management Plan. (CA06ACEC-60). California Desert District. Indio Resource Area. 1982.

———. "Record of Decision. Eagle Mountain Landfill Project. Riverside County, California. Land Exchange CACA-30070. Right-of-Way Grant CACA-25594. Right-of-Way Grant CACA-31936." California Desert District. Riverside, CA. 1993.

———. "The Coachella Valley Preserve System Management Plan and Decision Record." Palm Springs—South Coast Resource Area. 1995.

———. Draft Chuckwalla Bench ACEC Management Plan and Environmental Assessment. California Desert District. Undated.

Bureau of Land Management and the County of Riverside. Final Environmental Impact Statement/Environmental Impact Report for the Proposed Eagle Mountain Landfill Project. Specific Plan No. 252. State Clearinghouse No. 8908413. June 1992.

California Department of Fish and Game. "California Department of Fish and Game, Natural Heritage Division, Natural Diversity Data Base, Special Plants List." Natural Heritage Division. Sacramento, CA. 1994a.

———. "California Endangered Species Act Memorandum of Understanding [CESA MOU] by and between Mine Reclamation Corporation and California Department of Fish and Game Regarding Eagle Mountain Landfill Project." Track No. 9248. Sacramento, CA. 1994b.

———. "Agreement regarding proposed stream of lake alteration." Notification No. 5-51-93. Long Beach, CA. 1994c.

———. "California Department of Fish and Game Natural Diversity Data Base. Special Animals." Natural Heritage Division. Sacramento, CA. August 1994d.

Camp, R. J., R. L. Knight, and J. Freilich. "Common Raven populations in Joshua Tree National Monument, California." *Western Birds* 24:198-199. 1993.

Coachella Valley Fringe-toed Lizard Habitat Conservation Plan Steering Committee. "Coachella Valley Fringe-toed Lizard Habitat Conservation Plan." 1985.

Council on Environmental Quality, Executive Office of the President. Incorporating Biodiversity Considerations Into Environmental Impact Analysis Under the National Environmental Policy Act, p. 29. January 1993.

Cummings, J. L., J. R. Mason, D. L. Otis, and J. F. Heisterberg. "Evaluation of Dimethyl and Methyl Anthranilate as a Canada Goose Repellent on Grass." *Wildlife Society Bulletin* 19:184-190. 1991a.

Cummings, J. L., D. L. Otis, and E. Davis. " Dimethyl and Methyl Anthranilate and Methiocarb Deter Feeding in Captive Canada Geese and Mallards." *Journal of Wildlife Management.* 1991b.

Department of the Army, Corps of Engineers. Memorandum from Bruce Henderson, Acting Chief, South Coast Section, Regulatory Branch of the U.S. Army Corps of Engineers to Gary Johnson, Vice President of Mine Reclamation Corporation. Los Angeles, CA. 1994.

Desert Tortoise Council. "Guidelines for Handling Desert Tortoises During Construction Projects." Edward L. LaRue, Jr., editor. San Bernardino, California. 1994.

Dixon, J. B. "The Golden Eagle in San Diego County, California." *Condor.* Vol. 39, pp. 49-56. 1937.

Engel, K. A., and L. S. Young. "Movements and Habitat Use of Common Ravens from roost sites in southwestern Idaho." *Journal of Wildlife Management.* 56(3):596-602. 1992.

FaunaWest Wildlife Consultants. "Relative Abundance and Distribution of the Common Raven in the Deserts of Southern California and Nevada during Spring and Summer of 1989." Prepared for the USDI Bureau of Land Management, California Desert District, Riverside, CA. Contract No. YA651-CT9-340035. 1989.

Grinnell, J. "Review of the Recent Mammal Fauna of California." University of California Publications in Zoology. Vol. 40, No. 2. pp. 71-234. 1933.

Harmata, A. R., J. E. Durr, and H. Geduldig. "Home Range, Activity Patterns, and Habitat Use of Prairie Falcons Nesting in the Mojave Desert." Unpublished report. USDI Bureau of Land Management. Contract #YA-512-CT8-43. 89 pp. 1978.

Hickman, J. C., ed. *The Jepson Manual. Higher Plants of California.* Berkeley and Los Angeles: University of California Press. 1993.

Knight R. L. H. A. L. Knight, and R. J. Camp. "Raven Populations and Land-use Patterns in the Mojave Desert, California." *Wildlife Society Bulletin.* 21:469-471. 1993.

Knight, R. L., and J. K. Kawashima. "Responses of Raven and Red-tail Hawk Populations to Linear Right-of-ways." *Journal of Wildlife Management.* 57(2):266-271. 1993.

Knight, R. L., and M. W. Call. *The Common Raven.* USDI Bureau of Land Management. U.S. Government Printing Office. Denver, CO. Technical Note #344. Undated.

Knowles, C. J., and K. H. Berry. "Relative Abundance and Distribution of the Common Raven in the Deserts of California and Nevada, Fall 1988 through Summer 1989." Proceedings of the Desert Tortoise Council 1987-1991 Symposia, p. 247. 1989.

Miller, A. H., and R. C. Stebbins. *The Lives of Desert Animals in Joshua Tree National Monument.* Berkeley and Los Angeles: University of California Press. 1964.

Munz, P. A. *A Flora of Southern California.* Berkeley and Los Angeles: University of California Press. 1974.

National Park Service. "Memorandum of Agreement Between the National Park Service (NPS), California Department of Fish and Game (CDFG), and Mine Reclamation Corporation (MCR) to conduct a study of desert bighorn movements and habitat use in the area of the proposed Eagle Mountain Landfill Project, California." NPS Agreement No. MA8857-93-001. 1993.

———. General Management Plan, Development Concept Plan, Environmental Impact Statement, Joshua Tree National Park. Prepared by U.S. Department of Interior. 1995.

Peterson, A. T. "Birds of Eagle Mountain, Joshua Tree National Monument, California. *Western Birds.* Vol. 21. pp. 127-135. 1990.

Pitelka, F. A. "Speciation and Ecological Distribution in American Jays of the Genus *Aphelocoma.*" University of California Publications in Zoology. Vol. 50, No. 3, pp. 195-464. Berkeley and Los Angeles, CA. 1951.

RECON. Biological Technical Report for the Eagle Mountain Landfill Project. RECON No l2100B. Unpublished. San Diego, CA. 1991.

———. USDI Bureau of Land Management, Palm Springs, CA. RECON No. 2100B. San Diego, CA. 1992.

———. "Annual Summary Report for the Eagle Mountain Landfill Biological Mitigation and Monitoring Program. Riverside County, California." RECON NO. 2841B. San Diego, CA. 1994.

———. "Eagle Mountain Landfill—Alverson's Foxtail Cactus Mitigation Trial (RECON Number 2481L)." Memorandum from RECON to Mine Reclamation Corporation reporting the results of a two-year study on the experimental transplantation of individual cactus. San Diego, CA. 1995.

Schoenherr, A. A. *The Natural History of California.* Berkeley and Los Angeles: University of California Press. 1992.

Skinner, M. W., and B. M. Pavlik, eds. *California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California.* Special Publication No. 1. Fifth Edition. Sacramento, CA. 1994.

Thelander, C. G., and M. Crabtree, eds. *Life on the Edge: A Guide To California's Endangered Resources: Wildlife*. Biosystems Books. Santa Cruz, CA. 1994.

Fish and Wildlife Service. "Biological Opinion for the Eagle Mountain Landfill Project (1-6-92-F-39)." Calrsbad, CA. 1992.

———. "50 CFR 17.11 and 17.12. Endangered and Threatened Wildlife and Plants." August 23, 1993. U.S. Government Printing Office. 1993a.

———. Memorandum re: "Request for Initiation of Formal Section 7 Conference on the Eagle Mountain Landfill, Riverside County, California." Carlsbad, CA. 1993b.

———. Determination of Critical Habitat for the Mojave Population of the Desert Tortoise; Final Rule. 50 CFR Part 17. *Federal Register*. February 8, 1994.

Zarn, M. "Burrowing Owl, *Speotyto cunicularia hypugea."* USDI Bureau of Land Management. Technical Note No. 250. Washington, D.C. 1974.

Zeiner, D. C., W. F. Laudenslayer, Jr., K. E. Mayer, and M. White, eds. *California's Wildlife. Volume 1, Amphibians and Reptiles*. California Statewide Wildlife Habitat Relationships System. State of California. The Resources Agency. Department of Fish and Game. Sacramento, CA. 272 pp. 1988.

———. *California's Wildlife. Volume II. Birds.* California Statement Wildlife Habitat Relationships System. State of California. The Resources Agency. Department of Fish and Game. Sacramento, CA. 732 pp. 1990a.

———. *California's Wildlife. Volume III. Mammals.* California Statewide Wildlife Habitat Relationships System. State of California. The Resources Agency. Department of Fish and Game. Sacramento, CA. 407 pp. 1990b.

Section 3.8 and 4.8 Growth Inducement and Socioeconomics

Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. February 1994.

Sections 3.9 and 4.9 Geology and Mineral Resources

Anderson, D. G., and E. Kavazanjian, Jr. Performance of Landfills Under Seismic Loading. Presented at the Third International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics. April 2-7, 1995.

California Department of Conservation Division of Mines and Geology (CDMG), Office of Strong Motion Studies. Processed CSMIP Strong-Motion Records from the Northridge Earthquake: Release No. 1. Report No. OSMS 94-06B. February 7, 1994.

———. California Strong Motion Instrumentation Program (CSMIP). Strong-Motion Data from the San Fernando Valley Earthquake. Report OSMS 94-01. January 17, 1994.

County of Los Angeles, Department of Public Works, Waste Management Division. The Impact of the January 17, 1994 Northridge Earthquake on the Active and Proposed Landfill Sites Within the Unincorporated Areas of Los Angeles County. Submitted to the County of Los Angeles Board of Supervisors. August 1994.

GeoSyntec. Report of Waste Discharge. Report submitted to Mine Reclamation Corporation by GeoSyntec Consultants, Huntington Beach, CA. 1992.

———. Summary of Information on the Absence of Holocene Fault Displacement, Eagle Mountain Landfill and Recycling Center. Prepared for Mine Reclamation Company, Palm Springs, California. October 1993.

———. Ground-Water Investigation and Monitoring Summary Report, Eagle Mountain Landfill and Recycling Center, Riverside County, CA. Report submitted to Mine Reclamation Corporation by GeoSyntec Consultants, Huntington Beach, CA. 1996.

Herbst, C. Observations of Landfill Performance, Northridge Earthquake. Memorandum to Douglas Okumura. March 31, 1994.

Kavazanjian, Edward, Jr. "Performance of a Geosynthetic Liner System in the Northridge Earthquake." *Geotechnical Fabrics Report.* March 1994.

Kavazanjian, E., Jr. et al. Assessment of Performance of the Disposal Area C Liner System During the Northridge Earthquake and Damage to Geotextile and Geonet, Lopez Canyon Sanitary Landfill. Memorandum to Kelly M. Gharios. February 17, 1994.

———. Regulatory Overview for Seismic Design of Landfills. Presented to the University of California at Berkeley Earthquake Engineering Research Center and University Extension Workshop on Seismic Design and Performance of Waste Fills. January 21, 1995.

———. "Hazard Analysis for a Large Regional Landfill." Earthquake Design and Performance of Solid Waste Landfills. October 1995.

Kohler-Antablin, S. Mineral Land Classification of the Eastern Half of Riverside County, California. Open File Report 94-11. Submitted to California Department of Conservation Division of Mines and Geology. 1994.

Matasovic, N., et al. Solid Waste Landfill Damage Caused by 17 January 1994 Northridge Earthquake. The Northridge, California Earthquake of 17 January 1994. California Department of Conservation, Division of Mines and Geology. 1994.

Proctor, R. J. Faults and Micro-Seismicity Investigations and Conclusions; Proposed Eagle Mountain Landfill Site, Riverside County, California. Prepared for Mine Reclamation Corporation, Palm Springs, California. May 1993.

Richardson, G. N. et al. RCRA Subtitle D (258), Seismic Design Guidance for Municipal Solid Waste Landfill Facilities. Submitted to Risk Reduction Engineering Laboratory, Office of Research and Development, U.S. Environmental Protection Agency. 19xx.

Seismic Safety Commission, State of California. Northridge Earthquake Turning Loss to Gain. SSC Report No. 95-01. Submitted to Governor Pete Wilson in response to Governor's Executive Order W-78-94. 1995.

Shlemon, R. J. Updated Report, Geomorphic and Soil-Stratigraphic Age Assessments, Alluvial Deposits, Proposed Eagle Mountain Landfill Site, Riverside County, California. Prepared for Mine Reclamation Corporation, Palm Springs, California. May 1993.

Yegian, M. K., and W. D. Liam Finn. Earthquake Design and Performance of Solid Waste Landfills. Geotechnical Special Publication No. 54. Proceedings of the Session Sponsored by the Soil Mechanics Committee of the Geotechnical Engineering Division of the American Society of Civil Engineers with ASCE Convention. San Diego. October 23-27, 1995.

Sections 3.10 and 4.10 Visual and Recreation

Bureau of Land Management. Visual Resource Management Program. 1980.

———. Final Environmental Impact Statement and Proposed Plan for the California Desert Conservation Area. 1980.

———. Manual Handbook 8410-1, Visual Resource Inventory. January 17, 1986a.

———. Manual Handbook 8431-1, Visual Resource Contrast Rating. January 17, 1986b.

———. California Statewide Wilderness Study Report. 1991.

Furbush, Patty A. *On Foot in Joshua Tree: A Comprehensive Hiking Guide to a National Park Service Area.* M.I. Adventure Publications, West Lebanon, ME. February 1992.

Joshua Tree National Park Backcountry/Wilderness Management Planning Team. Joshua Tree National Park Newsletter No. 1. April 1995.

Nikano, Alan. CALTRANS District 8. Telephone conversation with Terry Babich, CH2M HILL. August 9, 1995.

National Park Service. Natural Resource Management Guidelines. 1991.

———. Final Environmental Impact Statement, General Management Plan for Joshua Tree National Park. 1995.

———. Joshua Tree National Park. JTNP Monthly Public Use Report - December 1993, December 1994, June 1995.

Riverside County Planning Department. Riverside County Comprehensive General Plan, Environmental Hazards and Resources Element, Scenic Highway. December 18, 1984.

Sections 3.11 and 4.11 Wilderness

BBN Systems and Technologies. Estimation of Aircraft Overflight Exposure in National Parks and Forest Service Wilderness. Prepared for National Park Service, Denver Service Center. BBN Report No. 7259. NPOA Report No. 92-1. Canoga Park, California. August 1992.

———. Intermediate Term Effects of Aircraft Overflight Exposure on Outdoor Recreationists in Twelve Wildernesses. Prepared for National Park Service, U.S. Department of the Interior, Forest Service, U.S. Department of Agriculture. Denver Service Center. BBN Report No. 7503. Canoga Park, California. January 1994.

Bureau of Land Management. Wilderness Inventory Handbook: Policy, Direction, Procedures, and Guidance for Conducting Wilderness Inventory on the Public Lands. September 27, 1978.

———. The California Desert Conservation Area Plan, 1980.

———. Desert District Riverside, California. California Desert Conservation Area Plan. 1988.

———. California Desert District Record of Decision, Eagle Mountain Landfill Project, Riverside, California. October 1993.

———. Bureau of Land Management Wilderness Areas, National Parks Preserve, Maps and Information. June 1995.

Bureau of Land Management and National Park Service; U.S. Department of Agriculture, Forest Service. Policy, Direction, Procedures, and Guidance for Conducting Wilderness Inventory on the Public Lands. Wilderness Inventory Handbook. September 27, 1978.

———. Management of Designated Wilderness Areas. Subject 8560. April 27, 1983.

———. Management Policies: U.S. Department of the Interior, National Park Service. 1988.

———. National Environmental Policy Act Handbook. Portland, Oregon: Bureau of Land Management. H-1790-1. October 25, 1988.

———. California Statewide Wilderness Study Report. Sacramento, California: Bureau of Land Management. Parts 1-4. BLM-CA-PT-91-017-8520. 1990-1991.

———. Problems and Practices in Backcountry Recreation Management: A Survey of National Park Service Mangers. Denver, Colorado: National Park Service. Natural Resources report NPS/NRVT/NRR-93/12. October 1993.

———. 1995 California Interagency Wilderness Management Training. Stovepipe Wells, Death Valley, California. May 15-19, 1995.

Department of Agriculture, Forest Service. Managing Wilderness Recreation Use: Common Problems and Potential Solutions. Ogden, Utah: Intermountain Research Station. August 1987. General Technical Report INT-230. August 1987.

Furbush, Patty A. *On Foot in Joshua Tree. A Comprehensive Hiking Guide to a National Park Service Area.* M.I. Adventure Publications. West Lebanon, ME. February 1992.

Harris Miller Miller & Hanson, Inc. National Park Service Aircraft Overflight Study. Detailed Sampling, Data Collection and Analysis Plan for: Air Tour passenger Survey, NPS

Manager Study, General Population Survey. Prepared for National Park Service, U.S. Department of the Interior. NPOA Report No. 92-3. July 1992.

———. Aircraft Overflight Effects on Wildlife Resources. Prepared for National Park Service, Denver Service Center. NPOA Report No. 93-8. November 1993.

National Park Service. Wilderness Recommendation. Joshua Tree National Monument. August 1972.

———. Proposed Wilderness Area, Joshua Tree National Monument, California. revised Draft Environmental Statement. Denver, Colorado: National Park Service. February 21, 1973.

———. Proposed Wilderness Classification, Grand Teton National Park, Wyoming. Final Environmental Statement. EIS-WY-73-0842-F. May 8, 1973.

———. Proposed Wilderness Area, Joshua Tree National Monument, California. Final Environmental Statement. Denver, Colorado: National Park Service. EIS-CA-73-1976-F. November 9, 1973.

———. *Joshua Tree Wilderness Description of Boundaries, as designated by Public Law 94-567.* October 20, 1976.

———. Statement for Management. Joshua Tree National Monument, California. Revised April 1982.

———. Land Protection Plan. Joshua Tree National Monument/California. July 1986.

———. Management Plan for Cultural and Natural Resources, Joshua Tree National Monument. October 1993.

———. Joshua Tree National Monument, Boundary Research File. Microfiche, 1993 to 1950.

———. General Management Plans, Development Concept Plan, Environmental Impact Statement. May 1995.

———. Record of Decision for General Management Plan, Development Concept Plans, Final Environmental Impact Statement. September 1995.

U.S. Congress. Senate and House. California Desert Protection Act of 1994. 103rd Congress, 2nd Session, January 25, 1994. S.21.

U.S. Congress. Senate. Committee on Interior and Insular Affairs. Subcommittee on Parks and Recreation of the Committee on Interior and Insular Affairs. Management of National Parks. 94th Congress, 1st Session on Management of Policies and Problems in the National Park System. CIS-1976-S411-43. 1976.

The Wilderness Society. *The Wilderness Act Handbook.* 2nd ed. Washington, D.C.: The Wilderness Society. September 1994.

Sections 3.12 and 4.12 Utilities and Services

Bureau of Land Management and the County of Riverside. Final Environmental Impact Statement/Environmental Impact Report for the Proposed Eagle Mountain Landfill Project. Specific Plan No. 252. State Clearinghouse No. 8908413. June 1992.

———. Environmental Impact Statement/Environmental Impact Report for the proposed Eagle Mountain Landfill Project. 1992.

SCS Engineers. Municipal Landfill Gas Condensate. Draft Report. EPA Contract No.68002-3993. Environmental Protection Agency. April 1987.

Sections 3.13 and 4.13 Noise

County of Riverside. General Plan (Noise Element). 1986

Department of Transportation. DFHWA Highway Traffic Noise Prediction Model, Report No. FHWA-FD-77-108. Washington, D.C.: Federal Highway Administration. December 1978.

Environmental Protection Agency. Noise From Construction Equipment and Operations, Building Equipment and Home Appliances. 1971.

Wyle Laboratories. Assessment of Noise Environments Around Railroad Operations. The Association of American Railroads. July 1973.

Sections 3.14 and 4.14 Cultural Resources

Bedwell, Stephen. Prehistory and Environment of the Pluvial Fort Rock Lake Area of South Central Oregon. University of Oregon. 1970.

Greenwood & Associates. Cultural Resource Investigation, Eagle Mountain Townsite. August 1995.

Moratto, Michael. California Archaeology. Academic Press, Inc. 1984.

Shaefer, Jerry. Late Prehistoric Adaptations During the Final Recessions of Lake Cahuilla: Fish Camps and Quarries on West Mesa, Imperial County, California. Mooney-Lettieri and Associates. 1985.

———. Schaefer J. et al. Settlement and Subsistence at San Sebastian: A Desert Oasis on San Felipe Creek, Imperial County, California. Brian F. Mooney Associates. 1987.

———. Lowland Patayan Adaptations to Ephemeral Alkali Pans at Superstition Mountain, West Mesa, Imperial County, California. Brian F. Mooney Associates. 1988.

3.16 and 4.16 Energy Consumption/Generation

Hamm, Ph.D., R. K., and Jeffrey Stinson. The Potential for Gas Generation and Leachate Production at the Proposed Eagle Mountain Landfill. Prepared for Mine Reclamation Corporation. July 1990.

MRC (Mine Reclamation Corporation). Report of Disposal Site Information—Eagle Mountain Landfill and Recycling Center. March 1994.

SCAQMD (South Coast Air Quality Management District). Information from the 1994 Air Quality Management Plan Environmental Impact Report. Personal communication between Tara Sheehy/SCAQMD and Robert Price/CH2M HILL. December 1, 1995.

Sections 5.0—Cumulative Effects

Bureau of Land Management. La Paz County Proposed Land Transfer and Right-of-Way Application Environmental Assessment. EA No. AZ-054-95-46. BLM Havasu Resource Area. October 5, 1995.

California Office of Planning and Research. CEQA: California Environmental Quality Act Statutes and Guidelines. 1992.

County of Riverside. Riverside County Comprehensive General Plan. 1992.

County of San Bernardino and U.S. Department of Interior, Bureau of Land Management. Final Environmental Impact Report/Environmental Impact Statement Rail-Cycle Bolo Station Landfill. 1994.

Eagle Crest Energy Corporation (Eagle Mountain Energy Company/AES Joshua Tree, Inc.). Application for License for a Major Unconstructed Project (FERC No. 11080-000). Exhibits A, B, C, D, E, F, and G. Submitted to the Federal Energy Regulatory Commission. 1994.

General Plan/Development Concept Plan/Environmental Impact Statement. Joshua Tree National Park. 1995.

GeoSyntec. Evaluation of Select Groundwater Impacts From Proposed Eagle Mountain Pumped-Storage Hydroelectric Project, Chuckwalla Aquifer, Riverside County, California. Prepared for Mine Reclamation Corporation by GeoSyntec Consultants, Huntington Beach, California. 1995.

Kingsley Group. Personal correspondence from Steven Lautsch to Gary Johnson (MRC). March 17, 1995.

Mann, J.C. Groundwater Conditions in the Eagle Mountain Area. Report submitted to Kaiser Steel Corporation by John F. Mann, Jr., Consulting Geologist and Hydrologist. 1986.

National Park Service. Management Plan for Cultural and Natural Resources—Joshua Tree National Monument. October 1993.

———. Final General Management Plan/Development Concept Plans/Environmental Impact Statement—Joshua Tree National Park. 1995.

Resources Ltd. v. Robertson, 1994. 35F, 3d 1300, 1306, 9th Cir.

Riverside County Planning Department. Riverside County Comprehensive General Plan. 1992.

Riverside County Waste Resources Management District. Environmental Assessment and Notice to Adopt a Mitigated Negative Declaration for the Edom Hill Landfill Permit Revision. EA No. 36848. October 20, 1995.

Superior Court of San Diego. Statement of Decision Case No. 66209. 1994.

Bureau of Land Management. The California Desert Conservation Area Plan. 1980.

———. The California Desert Conservation Area Plan Alternatives and Environmental Impact Statement. 1980 and 1988.

———. Desert District, Riverside, California. California Desert Conservation Area Plan. 1988.

———. California Desert District and County of Imperial Planning & Building Department. Environmental Impact Statement & Environmental Impact Report for the Proposed Mesquite Regional Landfill. 1994.

National Park Service. Management Plan for Cultural and Natural Resources: Joshua Tree National Monument. Revised October 1993.

———. General Management Plan, Development Concept Plans, Environmental Impact Statement, Joshua Tree National Park, California. 1955a.

———. Final General Management Plan, Development Concept Plans, Environmental Impact Report, Joshua Tree National Park, California. May. 1995b.

10. Glossary of Terms, Acronyms, and Index

Glossary of Terms

AB939: Assembly Bill No. 939, which implemented mandatory waste reduction and recycling provisions upon California communities.

Acre-foot: Volume of liquid or solid required to cover an area of one acre to a depth of one foot.

Active fault: Geologic fault with seismic activity recent enough to have displaced materials not more than 12,000 years old.

Aerosol: A gaseous suspension of ultramicroscopic solid or liquid particles.

Air Space: The vertical space extending from the ground surface upward over a particular area of land or real estate.

Alluvium: A geologic term for general deposits made by streams, river beds, or floodplains. A deposit of silt or silty clay laid down during time of flood.

Ambient noise: A composite of all the existing sounds within a given location; i.e., background noise.

Aquifer: A geological formation that is sufficiently permeable to conduct groundwater and to yield significant quantities of water to wells and springs.

Area of Critical Environmental Concern (ACEC): A geographic area where special management is required to protect and prevent irreparable damage to important historic, cultural, or seismic values; fish and wildlife resources; or other natural systems or processes.

AQMD: Air Quality Management District.

Artificial fill: Human-made deposits of soil, rock, tailings, and the like.

Authority to Construct (ATC): Written permit pursuant to Rule 201, Regulation II, or other South Coast Air Quality Management District regulations, which must be obtained prior to the construction, alteration, or replacement of any article, machine, or equipment which may emit air contaminants or affect in any way the emission of those contaminants.

BACT: Best Available Control Technology.

Baseline groundwater monitoring: Measure of current or prevalent groundwater quality, prior to initiating a project, for the purpose of having a standard for future comparisons.

Bedrock: The solid rock that underlies other superficial material.

Biological oxygen demand (BOD): A measure of wastewater strength. The amount of oxygen required by bacteria to decompose organic matter in a water sample under aerobic conditions at 20 degrees Centigrade over a 5-day incubation period.

Biome: A regional biotic community, such as a desert, characterized by the dominant forms of plant life and prevailing climate.

Biosphere: A general term used to describe the totality and interaction of the living, biological environment.

British thermal unit (Btu): A measure of energy. The quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit at a specific temperature.

Calcium lignosulfate: A surficial sealant applied to porous ground surfaces to suppress dust.

Caliche: Gravel, sand, or desert debris cemented by porous calcium carbonate.

California Desert Conservation Area (CDCA) Plan: BLM program, pursuant to the FLPMA of 1976 (Section 610), which provides for the proper use of desert public lands and resources while safeguarding their environmental, cultural, and aesthetic values.

California Endangered Species Act: California state legislation, enacted in 1984, with the intent to protect floral and faunal species by listing them as "rare," "threatened" "endangered," or "candidate" and by providing a consultation process for the determination and resolution of potential adverse impact to the species.

California Environmental Quality Act (CEQA): Policies enacted in 1970, and subsequently amended, the intent of which is the maintenance of a quality environment for the people of California now and in the future.

CO_2: Carbon Dioxide

CO: Carbon Monoxide

Category IV Outlying Area: Area characterized as "self-sufficient" in terms of public services, with basic road improvements, low residential densities, limited convenience commercial services, and a potential for resource production and waste disposal, as considered appropriate.

Cell: A waste disposal/receptacle unit of undefined dimension within a landfill.

Cenozoic era: Geologic time span comprising both the Tertiary and the Quaternary periods (65 million years ago to the present).

Chemical oxygen demand (COD): The amount of oxygen required for the oxidation of the organic matter in a water sample. An indication of the quantity of organic matter present in the sample.

Class I Area: National park, national wilderness area, or national monument which meets one or more clean air standards and which must be protected against significant deterioration caused by pollutants.

Class III landfill: Facility that allows only the disposal of "nonhazardous municipal solid waste and construction debris waste."

Composite liner: A multi-layered synthetic liner that is designed to contain and prevent the migration of leachate and landfill gas that might be generated by the disposal of waste at a landfill.

CNEL: Community Noise Equivalent Level—a noise index that accounts for the greater annoyance of noise during evening and nighttime hours.

Contact water: Surface water run-on that comes into contact with waste at a landfill.

County Services Area (CSA) 51: Area in eastern Riverside County near the project location which includes the towns of Eagle Mountain, Desert Center, and Lake Tamarisk. These communities receive monies from the County general fund to pay for roads, water, and sewer.

Cretaceous period: Geologic time approximately 135 million years ago (compare Mesozoic era).

Crystalline rock: A rock consisting of minerals in an obvious crystalline state. Inexact synonym for "igneous and metamorphic rock" as opposed to "sedimentary."

dBA: A-weighted decibel; decibel weighted to reflect sounds most sensitive to human ears.

Desert Area: Designation under the Land Use Determination System that allows for open space and limited recreational uses, single-family residences (one dwelling unit per lot), landfills, compatible resource development, and governmental uses in lots of 10 acres in size.

Discretionary actions: Conditions which can be imposed on a project action prior to approval for implementation. The approval would thus be "at the discretion" of an agency.

Endangered species: A CEQA definition of a species whose prospects of survival and reproduction in the wild are in immediate jeopardy from one or more causes.

Environmental Impact Report (EIR): Document in which the impacts of any state or local, public or private project action which may have a significant environmental effect are evaluated prior to its construction or implementation, as required by the California Environmental Quality Act.

Environmental Impact Statement (EIS): Document prepared to evaluate the environmental effects of a project that requires federal review under the National Environmental Policy Act.

Eocene epoch: Geologic time within the Tertiary period corresponding to approximately 55 million years ago.

Equivalent Noise Level: (L_{eq}): The average noise level, on an energy basis, for a stated period of time (e.g., hourly).

Extrusive rock: Igneous rock that has erupted onto the surface of the earth.

Fault: A geologic fracture or fracture zone along which there has been displacement of the sides relative to one another.

Federal Drinking Water Standards: Primary health-protective standards for consumption of water by humans. Criteria set in 1962 by the U.S. Public Health Service that are used in determining the suitability of water for drinking and culinary purposes. The standards establish mandatory limits of maximum permissible concentration for certain chemical constituents and nonmandatory but recommended limits for others.

Fluviatile sediments: Sediments produced by river action.

Fossil fuel: Petroleum, natural gas, or coal. A general term for any hydrocarbon that may be used as fuel.

Geomembrane liner: Plastic landfill liner (see composite liner), underlain by a low-permeability soil liner layer with a low hydraulic conductivity.

Geotextile filter: A synthetic cushion layer placed over the geomembrane component of a composite liner to protect the geomembrane from overlying coarse, granular materials used to construct a leachate collection and removal system.

Green waste compost: A mixture of decaying organic solid waste matter used as fertilizer.

Groundwater basin: Underground geologic formation with sides and bottom of relative impervious material in which groundwater is held or retained. Aquifer or system of aquifers with well-defined boundaries.

Groundwater gradient: The slope of the profile of the water table under unconfined groundwater conditions, or the slope of the imaginary surface to which groundwater rises due to hydrostatic pressure under confined conditions (wells and springs).

Habitat area categories: System used to indicate level of importance for wildlife habitat management considerations; Category 1 designates the most important areas and Category 3 the least.

Hazard index: A measure of how hazardous a railroad crossing is relative to others, rather than an absolute measure of risk.

Hazardous material: Substance which, because of its potential for either corrosivity, toxicity, ignitability, chemical reactivity, or explosiveness, may cause injury to persons or damage to property.

Hazardous waste: Defined in Section 1004(5) of the federal Resource Conservation and Recovery Act (RCRA) as, "...a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may: (a) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (b) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed."

Household hazardous waste: Items such as nail polish, paint, cleaning products, insecticides, automotive and appliance batteries, aerosol cans, and other common household goods with contain hazardous constituents subject to disposal as hazardous wastes.

Holocene, or Recent, epoch: Geologic time within the Quaternary period from approximately 12,000 years ago to the present time.

Hydraulic conductivity: A coefficient of proportionality describing the rate at which water can move through a permeable medium (permeability coefficient).

Igneous rock: Rock that resulted from the solidification of molten or partly molten material.

Intermodal: Between transportation modes (e.g., rail vs. truck transport).

Intrusive rock: Rock which has been injected into the earth under pressure.

Lacustrine sediments: Sediments produced by lake action.

Landfill condensate: Liquid from the landfill gas which results from the temperature decline as the gas goes through during collection.

Landfill cover: Low-permeability compacted soil placed over completed sections of a landfill to minimize percolation of surface waters through the refuse and to prevent scavenging.

Landfill Mining: A proposed, but unproven technology/methodology to extract economically valuable materials from municipal landfills.

Landfill gas (LFG): Gas produced as part of the biological decomposition of the organic matter present in solid waste; methane is the principal component of this gas.

Landfill liner: Layer of low-permeability soil (clay) applied to the bottom of the landfill to direct leachate to the leachate collection system and minimize leakage in cases of leachate production.

Land Use Determination System: A four-step process established by the Riverside County Comprehensive General Plan for the identification of the appropriate land uses depending on the location of a particular site.

Leachate: Leachate is water that has infiltrated through, and come in contact with, landfill waste and as a result contains both suspended and dissolved substances from the waste material.

Local Enforcement Agency (LEA): The Riverside County Department of Health is the LEA acting for the California Integrated Waste Management Board. It will issue the County solid waste facilities permit.

Level of Service (LOS): An indicator of traffic conditions at an intersection or on a stretch of roadway, and of the delay that can be expected in the general area; A is the best (no delay) and F is the worst.

L50: Noise level exceeded 50 percent of the time.

Magma: Naturally occurring molten rock material.

Mesozoic era: Geologic time span comprising the Triassic, Jurassic, and Cretaceous periods (230 to 135 million years ago).

Metamorphic rock: Any rock derived from pre-existing rocks in response to marked changes in temperature, pressure, stress, etc.

Mine tailings: Rock and mineral waste components left at the site of mining extraction operations without current economically recoverable value.

Mineral Resources Area: Designation under the Land Use Determination System which allows for mineral production and compatible and related uses within a minimum lot size of 20 acres.

Mining reclamation plan: Restoration effort whereby equipment, homes, offices, and other structures are removed from the quarrying site and improvements are effected to stabilize surfaces and allow natural revegetation to occur.

Miocene epoch: Geologic time within the Tertiary period corresponding to approximately 20 million years ago.

Modal: Referring to a specific mode of transportation (e.g., rail or highway).

Mountainous Area: Designation under the Land Use Determination System which identifies an area with slopes in excess of 25 percent, with no county road access or community water system, and which allows for open space and limited recreational uses, single-family residences (one dwelling unit per lot), landfills, compatible resource development, and governmental uses in lots of 10 acres in size.

Multiple Use Class C (controlled use): CDCA Plan designated for an area where grazing, vehicle access, and most types of facility development are restricted.

Multiple Use Class I (intensive use): CDCA Plan designation for an area which allows for the concentrated use of lands and resources for human needs, but with reasonable protection for sensitive natural and cultural values and mitigation and rehabilitation whenever and wherever possible.

Multiple Use Class L (limited use): CDCA Plan designation for an area managed for generally low-intensity, carefully controlled multiple use of resources while ensuring that sensitive values are not significantly diminished.

Multiple Use Class M (moderate use): CDCA Plan designation for an area that allows for "a controlled balance" between low- and high-intensity uses while providing for activities such as mining, livestock grazing, recreation, and energy and utility development.

Municipal solid waste: A synonym for nonhazardous solid waste, as defined in Title 23 of the California Code of Regulations, which consist of all putrescible and nonputrescible solid and semisolid wastes, including: a) garbage, trash, refuse, paper, rubbish, and ashes; b) industrial, demolition, and construction wastes; c) abandoned vehicles and parts thereof; d) discarded home and industrial appliances; e) manure and animal solids; f) dewatered sewage sludge; and g) other solid or semisolid waste, which does not contain hazardous wastes or hazardous waste components.

National Environmental Policy Act (NEPA): 1969 federal legislation which encourages restoration and maintenance of environmental quality to the overall welfare of living things.

National Register of Historic Places: A list of significant historic and prehistoric sites and districts which provides procedural protection of these properties.

Noncontact water: Surface water runoff that does not come into contact with either waste or daily cover within the active area of a landfill.

Notice of Preparation (NOP): A brief notice sent by the public agency with principal responsibility for carrying out or approving a project to notify other agencies that an EIR is being prepared.

Overburden: A layer of soil or other material which overlays the landfilled waste mass.

Ozone (O_3): An end product of complex reactions between reactive organic gases (or non-methane hydrocarbons) and nitrogen oxides (NO_x) in the presence of intense ultraviolet radiation.

NO_2: Nitrogen dioxide.

NO_x: A generic term for various oxides of nitrogen.

Packer truck: A vehicle used for trash collection which hydraulically compacts the refuse as it is picked up.

Paleozoic era: Geologic time span from 600 to 230 million years ago.

Permeability: The capacity of porous rock, sediment, or soil for transmitting a fluid.

Permit to Operate: Written permit pursuant to Rule 203, Regulation II, of the SCAQMD which must be obtained from the Air Pollution Control District before the article, machine, or contrivance subject to an Authority to Construct is put into operation.

pH: Measure of acidity; the logarithm to the base 10 of the reciprocal of the H+ concentration ([H+]), i.e., the negative logarithm of the [H+].

Photolineaments: Faults observable from aerial photographs.

Pleistocene epoch: Geologic time within the Quaternary period corresponding to approximately 600,000 years ago.

Pliocene epoch: Geologic time within the Tertiary period corresponding to approximately 10 million years ago.

Precambrian era: Geologic time span 4.5 to 2 billion years ago.

Quaternary period: Geologic time span comprising both the Pleistocene and Holocene epochs (600,000 years ago to the present).

Rare species: A species which, although not presently threatened with extinction, is in such small numbers throughout its range that it may become endangered if its present environment worsens.

Regional Water Quality Control Board (RWQCB): Agency which administers the requirements of the California Administrative Code, Title 23, Division 3, Chapter 15 (Section 2595,g,7) to ensure the highest possible water quality consistent with all demands.

Remand: To send back a case to a lower court with instructions about further proceedings.

Responsible agency: The organization that has the lead duty to ensure that developers comply with the appropriate rules and regulations.

Right-of-way (ROW): The right to pass over property owned by another. The strip of land over which facilities such as roadways, railroads, or power lines are built.

Scat: Fecal evidence of wildlife presence.

Section 1603 Streambed Alteration Agreement: California Department of Fish and Game policy which regulates alteration to streambeds in order to protect fish and wildlife resources.

Section 404 Permit: Provision of the Clean Water Act which regulates the amount of fill material that can be placed within defined navigable waterways or wetlands in the United States, especially if federally listed species are involved; issued by the U.S. Army Corps of Engineers.

Section 7 Consultation: A requirement of the federal Endangered Species Act which requires formal consultation with the U.S. Fish and Wildlife Service if an action or project may result in impacts to an endangered species.

Seismicity: The likelihood of an area being subject to earthquakes.

Sensitive species: Generic term for any plant or animal species which is recognized by the government or by any conservation group as being depleted, rare, threatened, or endangered.

Sewage: Wastewater carried by community sewer systems. As defined in Section 13005 of the California Water Code, "any and all waste substance, liquid or solid, associated with human habitation, or which contains or may be contaminated with human or animal body wastes."

Significant environmental impact: As defined by CEQA, Chapter 3, Article 1, Section 15002(g), "a substantial adverse change in the physical conditions which exist in the area affected by the proposed project."

Silt: Mud or fine earth suspended in water.

Source reduction: In this context, measures to reduce the amount of types of municipal solid waste generated.

South Coast Air Quality Management District (SCAQMD): The air quality regulatory agency for the entire South Coast Air Basin.

SO_2: Sulfur dioxide.

Specific plan area: The extent of a detailed land use plan that is intended to implement the Comprehensive General Plan in the designated area. The specific plan incorporates and establishes land use policies and standards for activities and facilities under California Government Code Section 65450 *et seq.* and the County General Plan.

Specific yield: The ratio of the volume of water a rock or soil will yield by gravity drainage to the total volume of rock or soil. (Gravity drainage can take many months to occur.)

Stay: To delay or stop the effect of an order by legal action or mandate.

State Water Resources Control Board (SWRCB):

Tailings: See Mine Tailings

Tertiary period: Geologic time span comprising the Paleocene, Eocene, Oligocene, Miocene, and Pliocene epochs (65 to 10 million years ago).

Threatened species: Species which, although not presently threatened with extinction, is likely to become endangered in the foreseeable future in the absence of special protection and management efforts.

Tipper: A stationary platform which elevates a trailer so that its refuse is discharged from the rear of the trailer.

Total dissolved solids (TDS): The dry residue from the dissolved matter in a water sample that remains after the sample has evaporated. The TDS serve as an indicator of the chemical quality of waters.

Transfer Station: A local facility for accumulating municipal waste from individual collection trucks for subsequent transport to a disposal site.

Transmissivity: The rate at which water is transmitted or moves through a given area of an aquifer.

Vadose zone: A subsurface zone containing water below atmospheric pressure and air or gases at atmospheric pressure. Also known as unsaturated zone, zone of aeration.

Vector: A carrier capable of transmitting disease-causing organisms.

Vehicle delay: Cumulative amount of time vehicles are delayed at a railroad crossing. This delay is a function of the length of time the crossing is blocked by a train and of the arrival and departure rate per minute for each vehicle stopped at the crossing. Thus, if 60 vehicles are delayed for 1 minute, the vehicle delay for the crossing is said to be 60 minutes.

Visual Resource Management (VRM) System: BLM's method of assessing visual resources by defining landscape character and scenic quality.

Volatile organic compound (VOC): Any organic compound having a vapor pressure greater than 3.0 pounds per square inch as determined by the methods of the American Society of Testing and Materials.

VRM System: Visual Resource Management System

Waste rock: Residual material excavated during mining activities with little or no economic value.

Wasteshed: The geographic area (e.g., a county) within which waste in generated for ultimate disposal.

Watershed: A region bounded by a narrow tract of high ground which divides the flow of surface waters. A region that contributes water to a particular stream channel or system of channels.

Water table: The upper water level of a body of groundwater.

Waste discharge requirements: Regulation described in Title 23, Division 3, Chapter 15, of the California Code of Regulations which governs discharge of wastes to land in order to preserve the quality of the state's surface and groundwaters.

Waste inspection facility: A place located in either the Phase I or II container handling yard used to inspect and sort loads of waste generated locally (which are not processed through transfer stations) to remove hazardous materials.

Waste stream: The total sum of waste materials present from origin to disposal.

Wilderness Study Area (WSA): Parcel of public land that has been found to possess the basic wilderness characteristics identified by Congress in the Wilderness Act of 1964; namely, naturalness, outstanding opportunities for solitude or for primitive or unconfined types of recreation, size of at least 5,000 acres, and appearance of having been affected primarily by forces of nature.

Working face: Portion of the landfill where solid wastes are presently being disposed and covered with daily cover.

Writ of Mandate: A legal ruling issued in 1994 to the County of Riverside by the San Diego County Superior Court in reference to the EIR previously certified as part of the *Proposed Eagle Mountain Landfill and Recycling Center Project* (BLM and County of Riverside, June 1992).

Acronym List

AB	Assembly Bill
ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
ADT	Average Daily Traffic
ac-ft	acre-feet
ac-ft/yr	acre-feet per year
ANDAOS	Areas Not Designated as Open Space
AQMP	Air Quality Management Plan
ARB	Air Resources Board (State of California)
BACT	Best available control technology
BCMP	backcountry management plan
BFI	Browning-Ferris Industries
bg	background
BLM	Bureau of Land Management
BOD	biological oxygen demand
BP	before present
BTU	British thermal unit
CAA	Clean Air Act
CARB	California Air Resources Board
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CDCA	California Desert Conservation Area
CDCAP	California Desert Conservation Area Plan
CDFG	California Department of Fish and Game
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFC	Chlorofluorocarbons
cfs	cubic feet per second
CFR	Code of Federal Regulations
CH_4	methane
CIWMB	California Integrated Waste Management Board
CIWMP	County of Riverside Integrated Waste Management Plan
cm/s	centimeters per second
cm/sec	centimeters per second
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
COD	Chemical oxygen demand
COE	U.S. Army Corps of Engineers
CORE	Conservation of Resources Task Group

CEQ	Council on Environmental Quality
CoSWMP	Riverside County Solid Waste Management Plan
County	County of Riverside
Court	San Diego County Superior Court
CRIT	Colorado River Indian Tribes
cu ft/lb-yr	cubic feet per pound per year
CUP	Conditional Use Permit
CVAG	Coachella Valley Association of Governments
CVLUPA	Chuckwalla Valley Land Use Planning Area
CWA	Clean Water Act
dBA	A-weighted decibel
DOD	Department of Defense
DOI	Department of the Interior (United States)
DPA	Desert Protection Act
DTSC	Department of Toxic Substances Control
EA	Environmental Assessment
ECEC	Eagle Crest Energy Company
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMEC	Eagle Mountain Energy Company
EMT	emergency medical technician
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
fg	foreground
FHWA	Federal Highway Administration
FLPMA	Federal Land Policy and Management Act
FONSI	finding of no significant impact
FPA	Federal Power Act
GCL	geosynthetic-clay liner
GMP	General Management Plan
gpd	gallons per day
gpd/ft	gallons per day per foot
gpm	gallons per minute
gWhrs	gigawatt hours
HCP	Habitat conservation plan
HDPE	high-density polyethylene
HHW	Household Hazardous Waste
HMA	Habitat Management Area
HSA	Hazardous Substance Account
HSAA	Hazardous Substance Account Act
IBLA	Interior Board of Land Appeals

JTNM	Joshua Tree National Monument
JTNP	Joshua Tree National Park
Kaiser	Kaiser Eagle Mountain, Inc.
KOP	key observation point
KV	kilovolt
KWh	kilowatt-hour
LCRS	Leachate collection and removal system
LEA	Local Enforcement Agency
L_{eq}	Equivalent noise level
LFG	landfill gas
L_{max}	Maximum noise level
LOS	Level of Service
LWRF	Local Waste Receiving Facility
MCL	maximum contaminant level
mg	middle ground
mg	million gallon
mgd	million gallons per day
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MMBtu	Million British thermal units
mmcfd	million cubic feet per day
MOU	Memorandum of Understanding
MPH	miles per hour
MRC	Mine Reclamation Corporation
MRF	Materials recovery facilities
MSHA	Mine Safety and Health Act
MSHCP	Multiple Species Habitat Conservation Plan
msl	mean sea level
MSW	Municipal Solid Waste
MTC	Management and Training Corporation
MVA	megavolt amperes
MW	megawatt
MW	monitoring well
MWD	Metropolitan Water District of Southern California
NAAQS	National Ambient Air Quality Standards
NBS	National Biological Service
NEPA	National Environmental Policy Act
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NMHC	non-methane hydrocarbons
NO	nitric oxide
NO_2	nitrogen dioxide
NOEP	Notice of Exchange Proposal
NOI	Notice of Intent
NOP	Notice of Preparation

NORA	Notice of a Realty Action
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NPS	National Park Service
NSPS	new stationary pollutant source
NSR	New Source Review
O_3	ozone
OH	hydroxide
OPR	Office of Planning and Research (State of California)
OSHA	Occupational Safety and Health Act
P	piezometer
PA	Preliminary Assessment
PCBs	polychlorinated biphenyls
PM_{10}	10-micron particulate matter
ppm	parts per million
Project	Eagle Mountain Landfill and Recycling Center Project
PSD	Prevention of Significant Deterioration
PUC	Public Utilities Commission
RC district	Resource Conservation district
RCFCD	Riverside County Flood Control District
RCRA	Resource Conservation and Recovery Act
RDSI	Report of Disposal Site Information
RECLAIM	Regional Clean Air Incentives Market
RFP	Request for Proposal
ROD	Record of Decision
ROG	Reactive organic gases
ROWD	Report of Waste Discharge
RTCF	Return-to-custody facility
RWQCB	Regional Water Quality Control Board
SANDER	San Diego Energy Recovery project
SBM	San Bernardino Meridian
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCGC	Southern California Gas Company
SDWA	Safe Drinking Water Act
SEDAB	Southeast Desert Air Basin
SIP	State Implementation Plan
SMARA	Surface Mining and Reclamation Act
SO_2	sulfur dioxide
SO_x	sulfur oxides
SP	Specific Plan

SPTC	Southern Pacific Transportation Company
SRRE	Source Reduction and Recycling Element
STLC	soluble threshold limit concentration
SWFP	Solid Waste Facilities Permit
SWMP	Solid Waste Management Plan
SWRCB	State Water Resources Control Board
TDS	total dissolved solids
TOC	total organic carbon
TOX	total organic halides
Townsite	Eagle Mountain Townsite
tpd	tons per day
tpy	tons per year
TS	transfer station
TSP	total suspended particles
TSCA	Toxic Substances Control Act
TSDF	Treatment, Storage, and Disposal Facility
TSP	total suspended particles
TTLC	total threshold limit concentration
UGZMS	unsaturated gas zone monitoring system
URTD	upper respiratory disease (tortoises)
USACOE	United States Army Corps of Engineers
USC	United States Code
USFWS	United States Fish and Wildlife Service
USGS	United States Geologic Survey
VEBA	Volunteer Employee Benefit Association
VERP	Visitor Experience/Resource Protection
VHD	vehicle hour of delay
VLDPE	very low density polyethylene
VOC	volatile organic compound
VRC	visual resource classification
VRM	visual resources management
WDR	Waste Discharge Requirements
WET	waste extraction test
WSA	Wilderness Study Area

Index

A

Air emissions 3.4-11
Alternatives 1-8, 1-19, 1-41, 2-1, 2-2, 2-58, 2-76
Area of Critical environmental Concern 3.5-19
Assembly Bill 939 (AB 939) 1-5 to 1-6, 1-13, 1-20 to 1-21, 1-23 to 1-24, 1-26 to 1-27, 1-32, 1-39,2-19 to 2-24, 2-64 to 2-65
At-grade Crossing 3.3-1, 3.3-2, 3.3-4 to 3.3-8, 4.3-1 to 4.3-3, 4.3-7, 4.3-8, 4.3-27

B

Bats 3.7-10, 3.7-11, 3.7-14, 3.7-17, 3.7-25, 3.7-27, 3.7-28, 4.7-11, 4.7-29, 4.7-31
Bedrock aquifer 3.1-4, 3.1-7, 3.1-10, 3.1-11, 3.1-13, 3.1-21, 3.1-24, 3.1-25, 4.1-8, 4.1-12, 4.1-18, 4.1-29 to 4.1-32

C

California Desert Area Conservation Plan 3.5-15 to 3.5-17, 3.5-19, 4.5-27
California Environmental Quality Act (CEQA) 1-1, 1-9 to 1-10, 1-13, 1-19, 1-33, 1-40 to 1-41, 2-1, 2-66, 2-75, 4.2-1, 4.3-1, 4.5-1, 4.5-2, 4.5-5
California Integrated Waste Management Board, 1-2- to 1-22, 1-39 to 1-40, 2-19, 2-56 to 2-57, 2-70 to 2-75,
Chuckwalla aquifer 3.1-4, 3.1-7, 3.1-8, 3.1-10, 3.1-11, 3.1-21 to 3.1-25, 4.1-1 to 4.1-4, 4.1-26 to 4.1-33
Chuckwalla basin 3.1-1, 3.1-4, 3.1-5, 3.1-7, 3.1-8, 3.1-10, 3.1-16, 3.1-22, 3.1-23, 3.1-25 to 3.1-27, 4.1-2, 4.1-5, 4.1-19, 4.1-21, 4.1-26, 4.1-27, 4.1-30, 4.1-31
County Solid Waste Management Plan 3.5-26, 4.5-25, 4.5-26

D

Desert Center 1-7, 1-40, 2-63
Desert Pupfish 3.7-12, 3.7-20, 4.7-3, 4.7-4, 4.7-13, 4.7-14, 4.7-16 to 4.7-19, 4.7-38
Desert Tortoise 3.7-1, 3.7-12, 3.7-17, 3.7-21, 3.7-23, 4.7-1, 4.7-2, 4.7-5, 4.7-6, 4.7-8, 4.7-9, 4.7-13 to 4.7-16, 4.7-20 to 4.7-27, 4.7-31 to 4.7-32, 4.7-35 to 4.7-40
Drainage 3.6-1, 3.6-3, 4.6-1, 4.6-2, 4.6-4 to 4.6-9

E

Eagle Crest Energy Company 5-3, to 5-7, 5-15 to 5-19, 5-36 to 5-39, 5-42 to 5-44, 5-47 to 5-43

Eagle Mountain Road (and Extension) 1-6, 1-8, 1-13, 1-18, 1-36, 1-39, 2-8, 2-22, 2-47, 2-49, 2-59, 3.3-8, 3.3-12 to 3.3-14, 3.3-16, 3.5-3, 3.5-6, 3.5-9, 3.5-10, 3.5-12 to 3.5-17, 4.5-4, 4.5-12
Eagle Mountain Townsite 1-2, 1-6 to 1-10, 1-15, 1-18, 1-33, 2-2 to 2-3, 2-8, 2-14 to 2-16, 2-18 to 2-19, 2-25, 2-48, 2-59 to 2-60, 2-62 to 2-63, 3.2-1, 3.2-14, 3.2-15, 3.5-1, 3.5-2, 3.5-4, 3.5-4, 3.5-6, 3.5-8, 3.5-9, 3.5-13, 3.5-22, 3.5-23, 3.5-26, 4.2-8 to 4.2-13, 4.2-15, 4.2-16, 4.2-18, 4.2-20, 4.2-21, 4.2-23, 4.2-24, 4.2-28, 4.2-32,4.5-1, 4.5-4 to 4.5-9, 4.5-11 to 4.5-14, 4,5-16, 4.5-18 to 4.5-30, 4.9-1, 4.9-4, 4.9-7, 4.9-9, 4.9-18 to 4.9-20
Endangered Species 3.7-1, 3.7-5, 3.7-7, 4.7-1, 4.7-19, 4.7-31
Energy Recovery 4.16-5

F

Fault 3.9-1. 3.9-4, 3.9-5, 3.9-17, 3.9-19, 3.9-25, 3.9-26, 4.9-2, 4.9-3, 4.9-7 to 4.9-10, 4.9-15, 4.9-17
Federal Land Policy Management Act 1-6, 1-13, 1-18, 2-4, 2-8 to 2-9, 2-13, 2-14, 2-71, 3.5-15, 4.5-1
Ferrum Junction 1-6, 2-4, 2-13, 2-14, 2-22
Fire 3.2-1, 3.2-15, 4.2-1, 4.2-7, 4.2-9, 4.2-18 to 4.2-23
Fossil 4.15-1
Fuel consumption 4.16-1, 4.16-3, 4.16-4, 4.16-6
Fugitive dust 3.4-17, 4.4-4, 4.4-5, 4.4-10, 4.4-13, 4.4-16

G

Groundwater basin 3.1-1, 3.1-4, 3.1-8, 4.1-2, 4.1-31
Groundwater monitoring 3.1-16, 4.1-8, 4.1-11 to 4.1-13, 4.1-22 to 4.1-24
Groundwater quality 3.1-1, 3.1-24, 3.1-25, 4.1-1 to 4.1-23, 4.1-30
Groundwater use 3.1-25 to 3.1-27, 4.1-2, 4.1-24, 4.1-33 to 4.1-35

H

Hazard index 3.3-1, 3.3-8, 3.3-9, 4.3-2, 4.3-7, 4.3-8, 4.3-26
Hazardous material 3.2-1 to 3.2-6, 3.2-8, 3.2-11, 3.2-12, 3.2-14, 4.2-7, 4.2-8, 4.2-10, 4.2-11, 4.2-16, 4.2-29, 4.2-30
Hazardous waste 4.2-1 to 4.2-12, 4.2-16, 4.2-28, 4.2-29, 4.2-31

J

Joshua Tree National Park 1-5, 1-8, 1-11, 2-63, 3.1-5, 3.2-1, 3.2-7, 3.2-11, 3.2-16, 3.4-6, 3.4-8 to 3.4-10, 3.5-1, 3.5-10, 3.5-12, 3.5-14, 3.5-15, 3.5-19, 3.5-20, 3.7-4, 3.7-5, 3.7-11, 3.7-23, 3.7-26, 3.7-32, 3.10-1, 3.10-15 to 3.10-17, 3.11-1, 3-11-2, 3-11-4, 3.11-8, 3.11-12, 3-11-15 to 3.11-21, 3.11-24, 3.11-28 to 3.11-31, 3.13-1, 3.13-2, 3.13-9, 3.13-10, 4.1-19, 4.2-3, 4.2-9, 4.2-10, 4.2-13, 4.2-16, 4.2-20, 4.2-24 to 4.2-26, 4.4-2, 4.4-7 to 4.4-10, 4.5-12, 4.5-14 to 4.5-16, 4.7-2, 4.7-7, 4.7-8, 4.7-21, 4.7-29, 4.7-37, 4.7-38, 4.10-2, 4.10-3, 4.10-4, 4.10-7, 4.10-8 to

4.10-10, 4.10-13, 4.10-38, 4.10-39, 4.10-42, 4.10-43, 4.10-47, 4.10-48, 4.11-2, 4.11-6 to 4.11-10, 4.11-12 to 4.11-14, 4.13-1, 4.13-2, 4.13-4, 4.13-11, 4.13-15, 4.13-19, 4.13-20, 4.13-22 to 4.13-23, 4.13-27 to 4.13-29, 4.13-34, 4.13-36, 4.16-2, 4.16-3, 5-2, 5-6, 5-19, 5-24, 5-27, 5-38 to 5-38, 5-41 to 5-42, 5-44, 5-49 to 5-50

K

Kaiser Road 1-6 to 1-8, 2-9, 2-18, 2-22, 2-48, 2-59, 2-62, 3.3-9, 3.3-12, 3.3-13, 3.5-6 to 3.5-9, 3.5-11, 3.5-14, 3.5-17, 3.5-18, 4.3-11, 4.3-14, 4.3-21, 4.3-26, 4.3-28, 4.5-4, 4.5-8, 4.5-9, 4.5-12, 4.5-13, 4.5-23
Key observation point (KOP) 3.10-1, 3.10-8, 3.10-9, 3.10-12, 4.10-1, 4.10-3 to 4.10-9, 4.10-11, 4.10-13, 4.10-14, 4.10-19, 4.10-20, 4.10-33, 4.10-35, 4.10-37

L

Land exchange 1-1 to 1-2, 1-6, 1-8 to 1-11, 1-13, 1-15, 1-18, 1-32, 1-36, 1-39, 2-3, to 2-4, 2-8, 2-13, to 2-14, 2-18, 2-59, to 2-60, 2-62, to 2-63, 2-66, 2-77, 4.5-3, 4.5-10, 4.5-20, 4.5-25, 4.5-27 to 4.5-29
Landfill closure 2-34, 2-57
Landfill cover 2-23, 2-25, 2-26, 2-34, 2-37 to 2-41, 2-45 to 2-48, 2-51 to 2-52, 2-54, 2-62, 2-72 ,
Landfill gas 1-15, 1-38, 2-23, 2-26, 2-30, 2-34, 2-41 to 2-42, 2-47, to 2-48, 2-54, 2-56 to 2-57
Landfill design 2-19, 2-25, 2-61
Landfill liner 1-15, 2-23, 2-29, 2-46
Landfill mining 2-72 to 2-76
Landfill operation 2-14, 2-20, 2-40, 2-42, 2-47, 2-48, 2-54, 2-57
Leachate 2-26, 2-28, to 2-30, 2-40, 2-42, 2-54 to 2-55, 2-57, 2-59

M

Metropolitan Water District of Southern California 1-7, 1-18, 2-9, 3.5-4, 3.5-9, 3.5-10, 3.5-12, 4.5-2, 4.5-12, 4.5-19, 4.5-21, 4.5-28
Mine Reclamation Corporation (MRC) 1-2, 1-11, 1-15, 1-18, 1-31 to 1-33, 1-36 to 1-39, 2-3, 2-56 to 2-57, 2-63, 2-72
Mining (historical) 1-2
Mining reclamation plan 1-2, 1-5, 1-8, 1-39

N

National Environmental Policy Act (NEPA) 1-1, 1-13, 1-19, 1-40 to 1-41, 2-1, 2-66, 4.2-1
Nelson's Bighorn Sheep 4.7-11, 4.7-12, 4.7-13, 4.7-29, 4.7-30, 4.7-36, 4.7-38 to 4.7-40
Noise 3.13-1 to 3.13-10, 4.13-1 to 4.13-4, 4.13-6 to 4.13-41

O

Odor 4.4-11, 4.4-12

P

Pinto Basin 3.1-1, 3.1-5, 3.1-10, 3.1-25, 4.1-4
Public Health 3.2-1, 3.2-5, 3.2-6, 3.2-14, 4.2-1, 4.2-2, 4.2-6 to 4.2-9, 4.2-10 to 4.2-14, 4.2-16 to 4.2-18, 4.2-22 to 4.2-28, 4.2-31 to 4.2-33

R

Rail Yard 1-18, 2-9, 2-14, 2-23, 2-47 to 2-49, 2-51 to 2-52, 2-54 to 2-55, 2-60, 2-63, 4.3-1, 4.3-3, 4.13-3, 4.13-4, 4.13-6, 4.13-9, 4.13-20, 4.13-22, 4.13-23, 4.13-33
Recyclable 1-6, 2-20 to 2-23, 2-51, 2-64, 2-72
Regional Water Quality Control Board (RWQCB) 1-22, 1-37 to 1-38, 1-40, 2-30, 2-44 to 2-45, 2-57 2-70, 2-75, 3.1-1, 3.9-1, 3.9-19, 4.1-6, 4.1-7, 4.1-12, 4.1-18, 4.9-5, 4.9-13, 4.9-17
Rights-of-way 1-1 to 1-2, 1-6, 1-9, 1-13, 1-15, 1-18, 1-36, 2-3, 2-8 to 2-9, 2-13 to 2-14, 2-59 to 2-60

S

Seismicity 3.9-1, 3.9-4, 3.9-17, 3.9-19, 3.9-25, 3.9-26, 4.9-1, 4.9-2, 4.9-8 to 4.9-10, 4.9-13 to 4.9-19
Sensitive species 3.7-1, 3.7-10, 4.7-14, 4.7-35, 4.7-38
Sewage 3.12-2, 4.2-2, 4.2-16, 4.12-4
Source reduction 1-11, 1-13, 1-20 to 1-21, 1-29, 2-64
South Coast Air Basin (SCAB) 3.4-1, 3.4-6 to 3.4-8, 3.4-11, 4.4-8, 4.4-14, 4.4-17, 4.4-19
South Coast Air Quality Management District (SCAQMD) 3.4-8, 3.4-14, 3.4-16 to 3.4-18, 4.4-4, 4.4-10, 4.4-11
Southeast Desert Air Basin (SEDAB) 3.4-1, 3.4-4, 3.4-6, 3.4-11, 3.4-18, 4.4-8 to 4.4-19, 4.4-15, 4.4-18
Surface water 3.6-1, 3.6-3, 4.6-1, 4.6-2

T

Threatened species 3.7-7, 4.7-1, 4.7-25
Townsite (*See* Eagle Mountain Townsite)

U

Utilities 3.12-1, 3.12-2, 4.12-1, 4.12-2, 4.12-7, 4.12-10, 4.12-11, 4.12-13

V

Vector 3.2-1, 3.2-15, 3.2-16, 4.2-1, 4.2-2, 4.2-24 to 4.2-28
Vehicle delay 3.3-7, 4.3-1, 4.3-7
Visibility 3.4-9, 4.4-2, 4.4-7, 4.4-10
Visual Inventory 3.10-4, 3.10-5
Visual Resource Classification 3.10-4, 3.10-12, 3.10-14, 4.10-1, 4.10-34
Volatile Organic Compound (VOC) 3.2-13, 4.1-14, 4.2-14, 4.2-19

W

Waste diversion 2-2, 2-63 to 2-65
Wasteshed (seven counties) 1-5, 1-13, 1-22 to 1-24, 1-26, 2-19 to 2-20, 2-59, 2-64
Wilderness 1-11, 1-41, 3.4-8, 3.4-14, 3.5-1, 3.5-9, 3.5-10, 3.5-12, 3.5-14 to 3.5-16, 3.5-20, 3.7-23, 3.10-1, 3.10-10, 3.10-11, 3.10-16, 3.10-17, 3.10-19, 3.11-1 to 3.11-31, 3.13-2, 3.13-10, 4.5-14, 4.5-15, 4.5-28, 4.7-7, 4.10-3, 4.10-4, 4.10-7, 4.10-8, 4.10-42, 4.10-46, 4.11-1 to 4.11-17, 4.13-1, 4.13-2, 4.13-4, 4.13-11, 4.13-17, 4.13-19, 4.13-20, 4.13-22, 4.13-28, 4.13-29, 4.13-34 to 4.13-36
Wilderness experience 3.11-2, 3.11-3, 3.11-30, 4.11-1 to 4.11-5, 4.11-8, 4.11-13 , 4.11-14
Worker Safety 3.2-1, 3.2-15, 4.2-1, 4.2-2, 4.2-28

Z

Zoning 3.5-19, 3.5-20 to 3.5-23, 4.5-19, 4.5-20, 4.5-25, 4.5-25, 4.5-27, 4.5-29

BLM LIBRARY
RS 150A BLDG. 50
DENVER FEDERAL CENTER
P.O. BOX 25047
DENVER, CO 80225